



Arlington Zoning Board of Appeals

Date: Tuesday, May 16, 2023
Time: 7:30 PM
Location: Conducted by remote participation
Additional Details:

Agenda Items

Administrative Items

1. **Remote Participation**

In accordance with the Governor's Order Suspending Certain Provisions of the Open Meeting Law, G. L. c. 30A, § 20 relating to the COVID-19 emergency, the Arlington Zoning Board of Appeals meetings shall be physically closed to the public to avoid group congregation until further notice. The meeting shall instead be held virtually using Zoom.

Please read Governor Baker's Executive Order Suspending Certain Provision of Open Meeting Law for more information regarding virtual public hearings and meetings: <https://www.mass.gov/doc/open-meeting-law-order-march-12-2020/download>

You are invited to a Zoom meeting.

When: May 16, 2023 07:30 PM Eastern Time (US and Canada)

Register in advance for this meeting:

<https://town-arlington-ma-us.zoom.us/meeting/register/tZwfuutrzzgqHtlEXSGuMR5xgyZNDrsDlnCG>

After registering, you will receive a confirmation email containing information about joining the meeting.

Comprehensive Permits

2. **#3747 10 Sunnyside Avenue**

Meeting Adjourn



Town of Arlington, Massachusetts

Remote Participation

Summary:

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Town of Arlington, Massachusetts

#3747 10 Sunnyside Avenue

Summary:

ATTACHMENTS:

Type	File Name	Description
Reference Material	00_10_Sunnyside_40_B_App_-_Cover_Letter_and_Table_of_Contents.pdf	Cover Letter and Table of Contents
Reference Material	01_10_Sunnyside_PEL.pdf	Project Eligibility Letter
Reference Material	02_10_Sunnyside_501_c_3_letter.pdf	HCA 501 c3 letter
Reference Material	03_10_Sunnyside_Articles_of_Incorporation.pdf	Articles of Incorporation
Reference Material	04_10_Sunnyside_Ave_Deed.pdf	10 Sunnyside Deed
Reference Material	06_10_Sunnyside_Ave_Waiver_List.pdf	Requested Exemptions
Reference Material	10_Sunnyside_Ave_Zoning_Pro_Forma.xlsx	Pro-Forma
Reference Material	08_10_Sunnyside_-_Impact_Report.pdf	Impact Analysis of the Natural Built Environment
Reference Material	09_10_Sunnyside-Traffic_Impact_Study_Rev_1[10].pdf	Traffic Impact Study
Reference Material	10_10_Sunnyside_Zoning_app--_Dev_Team_.pdf	Roster of Development Team Members
Reference Material	11_10_Sunnyside_AbuttersList.pdf	List of Abutters and Owners
Reference Material	13_10_Sunnyside_Ave-_Town_Special_Permit.pdf	Zoning Application and Form
Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part1.pdf	Submission Drawings Part 1
Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part2.pdf	Submission Drawings Part 2
Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part3.pdf	Submission Drawings Part 3
Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part4.pdf	Submission Drawings Part 4
Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part5.pdf	Submission Drawings Part 5
Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part6.pdf	Submission Drawings Part 6
Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part7.pdf	Submission Drawings Part 7
Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part8.pdf	Submission Drawings Part 8
Reference Material	05_10_Sunnyside_ZBA_Drawings_-_March_09_2023_Part9.pdf	Submission Drawings Part 9
Reference Material	Sunnyside_Comments_HM_Spring_2023.pdf	Sunnyside Comments HM Spring 2023

Reference Material	2023424_GLAM_Analysis.pdf	2023424_GLAM Analysis
Reference Material	2023-04-23_Board_and_Department_Comments_10_Sunnyside.pdf	2023-04-23 Board and Department Comments_10 Sunnyside
Reference Material	Revilak_Letter_10_Sunnyside.pdf	Revilak_Letter 10 Sunnyside
Reference Material	Patzner_Letter_10_Sunnyside.pdf	Patzner_Letter 10 Sunnyside
Reference Material	Janowitz_Letter_10_Sunnyside.pdf	Janowitz_Letter 10 Sunnyside
Reference Material	Pretzer_Letter_10_Sunnyside.pdf	Pretzer_Letter 10 Sunnyside
Reference Material	Reuss_Letter_10_Sunnyside.pdf	Reuss_Letter 10 Sunnyside
Reference Material	Kelleher_Letter_10_Sunnyside_AHTF_Support_Letter.pdf	Kelleher_Letter 10 Sunnyside AHTF Support Letter
Reference Material	Fontenot_Letter_10_Sunnyside.pdf	Fontenot_Letter 10 Sunnyside
Reference Material	Tadley_Letter_10_Sunnyside.pdf	Tadley_Letter 10 Sunnyside
Reference Material	August_Letter_10_Sunnyside.pdf	August_Letter 10 Sunnyside
Reference Material	Gersh_Letter_10_Sunnyside.pdf	Gersh_Letter 10 Sunnyside
Reference Material	Bagnall_Letter_10_Sunnyside.pdf	Bagnall_Letter 10 Sunnyside
Reference Material	Kartch_Letter_10_Sunnyside_ZBA_Comments_4-29-23.pdf	KKartch_Letter 10 Sunnyside ZBA Comments 4-29-23
Reference Material	Greenspon_letter_10_SunnySide_Ave_Support.pdf	Greenspon_letter 10 SunnySide Ave_Support
Reference Material	Glickel_Letter_10_Sunnyside.pdf	Glickel_Letter 10 Sunnyside
Reference Material	Solomon_Letter_10_Sunnyside.pdf	Solomon_Letter 10 Sunnyside
Reference Material	Thornton_Letter_10_Sunnyside.pdf	Thornton_Letter 10 Sunnyside
Reference Material	Garber_Letter_10_Sunnyside.pdf	Garber_Letter 10 Sunnyside



Housing Corporation of Arlington

252 Massachusetts Avenue, Office, Arlington, MA 02474

tel: 781.859.5294

fax: 781.859.5632

info@housingcorporation.org

www.housingcorporation.org

March 17, 2023

Mr. Christian Klein
Chair
Arlington Zoning Board of Appeals
23 Maple Street
Arlington, MA 02476

RE: Comprehensive Permit Application- 10 Sunnyside Avenue, Arlington

Dear Chair Klein and Members of the Zoning Board of Appeals:

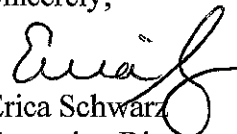
In accordance with the requirements of the Comprehensive Permit regulations of Chapter 40B, we hereby submit our application for the 10 Sunnyside Avenue Development Project in East Arlington.

Per the Comprehensive Permit Regulations, we understand that the Zoning Board of Appeals will schedule a public hearing within thirty days (30 days) of the receipt of this application.

We look forward to working with you and the other ZBA members to bring much-needed, well-designed and sustainable affordable housing to Arlington. As you review the application materials, if you have any questions, please do not hesitate to contact me.

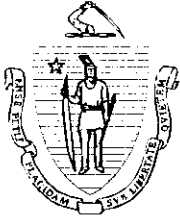
Thank you.

Sincerely,


Erica Schwarz
Executive Director

10 Sunnyside Avenue 40 B Application Table of Contents

Document	Zoning Application Requirement
Project Eligibility Letter	3.2.1, 3.2.3
Housing Corporation of Arlington 501 c 3 letter	3.2.2
Housing Corporation of Arlington Articles of Incorporation	3.2.2
10 Sunnyside Deed	3.2.4
Project Drawings Set	3.2.5, 3.2.6, 3.2.7, 3.2.8, 3.2.9
List of Requested Exemptions	3.2.11
Pro Forma	3.2.12
Impact Analysis of the Natural and Built Environment	3.2.10, 3.2.13, 3.2.16
Statement on Impact on Municipal Facilities and Services	See waiver list
Roster of Development Team Members	3.2.17
List of Abutters and Owner	3.2.18



Commonwealth of Massachusetts
**DEPARTMENT OF HOUSING &
COMMUNITY DEVELOPMENT**

Maura T. Healey, Governor ♦ Kimberley Driscoll, Lieutenant Governor ♦ Jennifer D. Maddox, Undersecretary

March 16, 2023

Ms. Erica Schwarz
Executive Director
Housing Corporation of Arlington
252 Massachusetts Avenue
Arlington, MA 02474

Re: 10 Sunnyside Avenue, Arlington, MA– Project Eligibility Letter

Dear Ms. Schwarz:

We are pleased to inform you that your application for project eligibility determination for the proposed 10 Sunnyside Avenue project located in Arlington, Massachusetts, has been approved under the Low Income Housing Tax Credit (LIHTC) program. The property is located at 10 Sunnyside Avenue, Arlington, Massachusetts. This approval indicates that the proposed plan is for 43 units of rental housing for families, 43 (100%) of which will be affordable at no more than 60% of area median income. The proposed development will consist of 16 one-bedroom units, 23 two-bedroom units and 4 three-bedroom units. The rental structure as described in the application is generally consistent with the standards for affordable housing to be included in the community's Chapter 40B affordable housing stock. This approval does not constitute a guarantee that LIHTC funds will be allocated to the 10 Sunnyside Avenue project. It does create a presumption of fundability under 760 CMR 56.04 and allows Housing Corporation of Arlington to apply to the Arlington Zoning Board of Appeals for a comprehensive permit. The sponsor should note that a One Stop + submission for funding for this project must conform to all Department of Housing and Community Development (DHCD) program limits and requirements in effect at the time of submission.

As part of the review process, DHCD has made the following findings:

1. The proposed project appears generally eligible under the requirements of the Low Income Housing Tax Credit program.
2. DHCD has performed an on-site inspection of the proposed 10 Sunnyside Avenue project and has determined that the proposed site is an appropriate location for the project. The project consists of the development of housing on the site of a former auto repair shop in a mixed use neighborhood. It is near the Alewife Brook Parkway recreation path and bus service on Broadway.
3. The proposed housing design is appropriate for the site. The 40 units will be built in a single five-story building. The building will have an elevator and aim for Passive House standards. There will be open space, ancillary office space and a community room.

4. The proposed project appears financially feasible in the context of the Arlington housing market. The proposal includes 43 units for households earning up to 60% AMI, with eight of those units to be reserved for households earning at or below 30% of AMI.
5. The initial proforma for the project appears financially feasible and consistent with the requirements for cost examination and limitations on profits on the basis of estimated development and operating costs. Please note again that a One Stop+ submission for funding for this project must conform to all DHCD program limits and requirements in effect at the time of submission.
6. An as-is appraisal has been commissioned. The Low-Income Housing Tax Credit Program Guidelines state that the allowable acquisition value of a site with a comprehensive permit must be equal to or less than the value under pre-existing zoning, plus reasonable carrying costs. If this project applies for funding under the Low-Income Housing Tax Credit Program, the acquisition price in the proposed budget should reflect these program guidelines.
7. The ownership entity will be a single-purpose entity controlled by the applicants and subject to limited dividend requirements. The ownership entity meet the general eligibility standards of the Low Income Housing Tax Credit program. The applicant will need to demonstrate sufficient capacity to successfully develop the project under the Low-Income Housing Tax Credit program.
8. Housing Corporation of Arlington has an option to purchase the site.
9. The Town of Arlington has submitted a letter of support for the project.

The proposed 10 Sunnyside Avenue project will have to comply with all state and local codes not specifically exempted by a comprehensive permit. In applying for a comprehensive permit, the project sponsor should identify all aspects of the proposal that will not comply with local requirements.

If a comprehensive permit is granted, construction of this project may not commence without DHCD's issuance of final approval pursuant to 760 CMR 56.04 (7) and an award of LIHTC funds. This project eligibility determination letter is not transferable to any other project sponsor or housing program without the express written consent of DHCD. When construction is complete, a Chapter 40B cost certification and an executed and recorded 40B regulatory agreement in compliance with DHCD's requirements pertaining to Chapter 40B must be submitted and approved by DHCD prior to the release of a Low-Income Housing Tax Credit form 8609.

This letter shall expire two years from this date, or on March 16, 2025, unless a comprehensive permit has been issued.

We congratulate you on your efforts to work with the town of Arlington to increase its supply of affordable housing. If you have any questions as you proceed with the project, please feel free to call or email Rebecca Frawley Wachtel at (617) 573-1318 or at Rebecca.Frawley@mass.gov.

Sincerely,



Catherine Racer
Director

cc: The Honorable Leonard Diggins, Chairman of the Arlington Select Board

Internal Revenue Service

Department of the Treasury

**P. O. Box 2508
Cincinnati, OH 45201**

Date: January 12, 2001.

Housing Corporation of Arlington
20 Academy Street, Room 203
Arlington, MA 02476

Person to Contact:

Tonya Martin 31-07387
Customer Service Representative

Toll Free Telephone Number:

8:00 a.m. to 9:30 p.m. EST
877-829-5500

Fax Number:

513-263-3756

Federal Identification Number:

04-2944144

Dear Sir or Madam:

This letter is in response to your letter dated January 5, 2001 requesting a copy of your organization's determination letter. This letter will take the place of the copy you requested.

Our records indicate that a determination letter issued in June 1990 granting your organization exemption from federal income tax under section 501(c)(3) of the Internal Revenue Code. That letter is still in effect.

Based on information subsequently submitted, we classified your organization as one that is not a private foundation within the meaning of section 509(a) of the Code because it is an organization described in sections 509(a)(1) and 170(b)(1)(A)(vi).

This classification was based on the assumption that your organization's operations would continue as stated in the application. If your organization's sources of support, or its character, method of operations, or purposes have changed, please let us know so we can consider the effect of the change on the exempt status and foundation status of your organization.

Your organization is required to file Form 990, Return of Organization Exempt from Income Tax, only if its gross receipts each year are normally more than \$25,000. If a return is required, it must be filed by the 15th day of the fifth month after the end of the organization's annual accounting period. The law imposes a penalty of \$20 a day, up to a maximum of \$10,000, when a return is filed late, unless there is reasonable cause for the delay.

All exempt organizations (unless specifically excluded) are liable for taxes under the Federal Insurance Contributions Act (social security taxes) on remuneration of \$100 or more paid to each employee during a calendar year. Your organization is not liable for the tax imposed under the Federal Unemployment Tax Act (FUTA).

Organizations that are not private foundations are not subject to the excise taxes under Chapter 42 of the Code. However, these organizations are not automatically exempt from other federal excise taxes.

Donors may deduct contributions to your organization as provided in section 170 of the Code. Bequests, legacies, devises, transfers, or gifts to your organization or for its use are deductible for federal estate and gift tax purposes if they meet the applicable provisions of sections 2055, 2106, and 2522 of the Code.

Housing Corporation of Arlington
04-2944144

Your organization is not required to file federal income tax returns unless it is subject to the tax on unrelated business income under section 511 of the Code. If your organization is subject to this tax, it must file an income tax return on the Form 990-T, Exempt Organization Business Income Tax Return. In this letter, we are not determining whether any of your organization's present or proposed activities are unrelated trade or business as defined in section 513 of the Code.

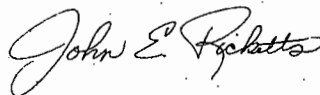
The law requires you to make your organization's annual return available for public inspection without charge for three years after the due date of the return. You are also required to make available for public inspection a copy of your organization's exemption application, any supporting documents and the exemption letter to any individual who requests such documents in person or in writing. You can charge only a reasonable fee for reproduction and actual postage costs for the copied materials. The law does not require you to provide copies of public inspection documents that are widely available, such as by posting them on the Internet (World Wide Web). You may be liable for a penalty of \$20 a day for each day you do not make these documents available for public inspection (up to a maximum of \$10,000 in the case of an annual return).

Because this letter could help resolve any questions about your organization's exempt status and foundation status, you should keep it with the organization's permanent records.

If you have any questions, please call us at the telephone number shown in the heading of this letter.

This letter affirms your organization's exempt status.

Sincerely,

A handwritten signature in cursive script that reads "John E. Ricketts".

John E. Ricketts, Director, TE/GE
Customer Account Services

The Commonwealth of Massachusetts

Office of the Secretary of State
One Ashburton Place, Boston, MA 02108

Michael Joseph Connolly, Secretary

ARTICLES OF ORGANIZATION

(Under G.L. Ch. 180)

Incorporators

NAME

RESIDENCE

Include given name in full in case of natural persons; in case of a corporation, give state of incorporation.

Deborah Chang	182 Westminster Avenue, Arlington, MA 02174
Alan McClennen	153 Claflin Street, Belmont, MA 02178
Robert Murray	153 Park Avenue Extension, Arlington, MA 02174

001000227

The above-named incorporator(s) do hereby associate (themselves) with the intention of forming a corporation under the provisions of General Laws, Chapter 180 and hereby state(s):

1. The name by which the corporation shall be known is:

Housing Corporation of Arlington

86-237613

2. The purposes for which the corporation is formed is as follows:

To acquire, develop, improve, sell, manage (mortgage, remortgage) and lease affordable housing in the Town of Arlington for low and moderate income families and to provide other social and civic services to benefit low and moderate income members of society.

To purchase, lease, or in any manner to own, hold, improve and develop for any and all purposes, and sell, convey, lease, mortgage, or in any manner dispose of or deal with lands and real property and any estate or interest therein; to contract, acquire by purchase, lease, or otherwise own, operate, manage, supervise and conduct, and to sell, lease, mortgage or otherwise dispose of apartment, apartment buildings, or any other type of residential property.

C ☐
P ☐
M ☐
R.A. ☐

Note: If the space provided under any article or item on this form is insufficient, additions shall be set forth on separate 8 1/2 x 11 sheets of paper leaving a left hand margin of at least 1 inch for binding. Additions to more than one article may be continued on a single sheet so long as each article requiring each such addition is clearly indicated.

3. If the corporation has more than one class of members, the designation of such classes, the manner of election or appointment, the duration of membership and the qualification and rights, including voting rights, of the members of each class, are as follows: -

N/A

- *4. Other lawful provisions, if any, for the conduct and regulation of the business and affairs of the corporation, for its voluntary dissolution, or for limiting, defining, or regulating the powers of the corporation, or of its directors or members, or of any class of members, are as follows:-

See Attachment A

5. By-laws of the corporation have been duly adopted and the initial directors, president, treasurer and clerk or other presiding, financial or recording officers whose names are set out below, have been duly elected.
6. The effective date of organization of the corporation shall be the date of filing with the Secretary of the Commonwealth or if later date is desired, specify date, (not more than 30 days after date of filing).
7. The following information shall not for any purpose be treated as a permanent part of the Articles of Organization of the corporation.

- a. The post office address of the initial principal office of the corporation in Massachusetts is:

Fair Housing Office
Town Hall
Arlington, MA 02174

- b. The name, residence, and post office address of each of the initial directors and following officers of the corporation are as follows:

	NAME	RESIDENCE	POST OFFICE ADDRESS
President:	Robert Murray	153 Park Avenue Extension Arlington, MA 02174	Fair Housing Office Town Hall Arlington, MA 02174
Treasurer:	Warren Ramirez	15 Pinkham Road P.O. Box 361 Medford, MA 02155	"
Clerk:	Deborah Chang	182 Westminster Avenue Arlington, MA 02174	"

Directors: (or officers having the powers of directors)

See Attachment B.

- c. The date initially adopted on which the corporation's fiscal year ends is:

June 30

- d. The date initially fixed in the by-laws for the annual meeting of members of the corporation is:

First Wednesday in October

- e. The name and business address of the resident agent, if any, of the corporation is:

N/A

IN WITNESS WHEREOF, and under the penalties of perjury the INCORPORATOR(S) sign(s) these Articles of Organization this 9th day of OCTOBER, 1986

I/We the below signed INCORPORATORS do hereby certify under the pains and penalties of perjury that I/We have not been convicted of any crimes relating to alcohol or gaming within the past ten years; I/We do hereby further certify that to the best of my/our knowledge the above named principal officers have not been similarly convicted. If so convicted, explain.

Robert Murray
Robert Murray

Deborah Chang
Deborah Chang

Alan McClennen
Alan McClennen

The signature of each incorporator which is not a natural person must be by an individual who shall show the capacity in which he acts and by signing shall represent under the penalties of perjury that he is duly authorized on its behalf to sign these Articles of Organization.

ATTACHMENT A

1. The Corporation shall have, and may exercise in furtherance of its corporate purposes, any and all of the powers specified in Massachusetts General Laws, Chapter 156B, Section 9 (except paragraph M thereof) and the power specified in General Laws Chapter 156B, Section 9A, provided that no such power shall be exercised in a manner inconsistent with Massachusetts General Laws Chapter 180 or any other Chapter of the General Laws.

2. No part of the net earnings of the corporation shall inure to the benefit of, or be distributable to its members, trustees, officers, or other private persons, except that the corporation shall be authorized and empowered to pay reasonable compensation for services rendered and to make payments and distributions in furtherance of the purposes set forth in Article Two hereof. No substantial part of the activities of the corporation shall be the carrying on of propaganda, otherwise attempting to influence legislation, and the corporation shall not participate in, or intervene in (including the publishing or distribution of statements) any political campaign on behalf of any candidate for public office. Notwithstanding any other provisions of these articles, the corporation shall not carry on any other activities not permitted to be carried on (a) by a corporation exempt from federal income tax under section 501(c)(3) of the Internal Revenue Code, or corresponding section of any future federal tax code, or (b) by a corporation, contributions to which are deductible under section 170(c)(2) of the Internal Revenue Code, or corresponding section of any future federal tax code.

3. Upon the dissolution of the corporation, assets shall be distributed for one or more exempt purposes within the meaning of section 501(c)(3) of the Internal Revenue Code, or corresponding section of any future federal tax code, or shall be distributed to the federal government, or to a state or local government, for a public purpose. Any such assets not so disposed of shall be disposed of by the Probate and Family Court of the county in which the principal office of the corporation is then located, exclusively for such purposes or to such organization or organizations, as said Court shall determine, which are organized and operated exclusively for such purposes.

ATTACHMENT B

<u>Schedule of Directors</u>	<u>Residence</u>	<u>Post Office Address</u>
William Maytum	25 Ridge Street Arlington, MA 02174	Fair Housing Office Town Hall Arlington, MA 02174
Robert Monahan	8 Bristol Road Peabody, MA 01960	"
Philip Waterman	11 Ronald Road Arlington, MA 02174	"
Joan Gross	4 Wollaston Avenue Arlington, MA 02174	"
Franklin Hurd, Jr.	10 Newton Road Arlington, MA 02174	"
Sr. Winifred Behlen	100 Wildwood Avenue Arlington, MA 02174	"
Wilson Henderson	56 Falmouth Road Arlington, MA 02174	"
Alan McClennen	153 Claflin Street Belmont, MA 02178	"
Ed Tsoi	16 Devereaux Street Arlington, MA 02174	"
Warren Ramirez	15 Pinkham Road P.O. Box 361 Medford, MA 02155	"
Deborah Chang	182 Westminster Avenue Arlington, MA 02174	"
Robert Murray	153 Claflin Street Belmont, MA 02178	"

30138

SECRETARY OF THE
COMMONWEALTH

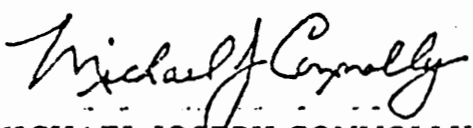
1986 OCT 10 PM 4: 05
CORPORATION DIVISION

THE COMMONWEALTH OF MASSACHUSETTS

ARTICLES OF ORGANIZATION
GENERAL LAWS, CHAPTER 180

I hereby certify that, upon an examination of the within-written articles of organization, duly submitted to me, it appears that the provisions of the General Laws relative to the organization of corporations have been complied with, and I hereby approve said articles; and the filing fee in the amount of \$30.00 having been paid, said articles are deemed to have been filed with me this 14th day of October 1986

Effective date


MICHAEL JOSEPH CONNOLLY
Secretary of State

TO BE FILLED IN BY CORPORATION
PHOTO COPY OF ARTICLES OF ORGANIZATION TO BE SENT

TO: Michael Eby, Esq.
Gilman, McLaughlin, Hanrahan
470 Atlantic Avenue, Boston, MA 02210
Telephone.....(617) 482-1900

Filing Fee \$30.00

Copy Mailed

Return Document to:

Kurt A. James, Esq.
KJP Partners LLP

Number of Pages: 3

Above for Registry use only

QUITCLAIM DEED

MB REALTY GROUP, LLC, a Massachusetts limited liability company with a mailing address at 339 Massachusetts Avenue, Arlington, MA 02474 (the "Grantor"),

for consideration paid and in full consideration of THREE MILLION SEVEN HUNDRED THOUSAND DOLLARS and 00/100 (\$3,700,000.00), the receipt and sufficiency of which are hereby acknowledge,

does hereby grant to **HOUSING CORPORATION OF ARLINGTON**, a Massachusetts nonprofit corporation with a mailing address at 252 Massachusetts Avenue, Arlington, MA 02474,

with QUITCLAIM COVENANTS,

the land with the buildings thereon situated in the Town of Arlington, Middlesex County, Massachusetts, commonly known as 10 Sunnyside Avenue and more particularly described on EXHIBIT A attached hereto and incorporated herein.

Grantor is not classified for the current taxable years as a corporation for federal income tax purposes.

Said premises are conveyed subject to and with the benefit of all easements, rights, restrictions, and agreements of record insofar as the same are still in force and applicable. Meaning and intending to convey and hereby conveying the parcel of land and all buildings thereon conveyed to the Grantor by Deed dated December 19, 2019, and recorded on December 23, 2019, with the Middlesex South District Registry of Deeds (the "Registry") at Book 73883, Page 259.

[SIGNATURES ON THE FOLLOWING PAGE]

Property Address: 10 Sunnyside Avenue, Arlington, MA

Executed under seal this 14 day of October, 2022.

MB REALTY GROUP, LLC

By:

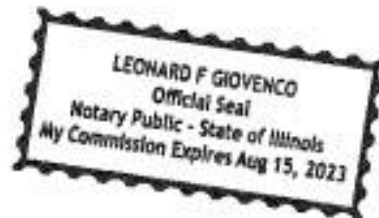
Name: Jim McIntyre


Title: Manager

STATE OF ILLIONIS

Cook ss.

On this 14 day of October 2022, before me the undersigned notary public, personally appeared **Jim McIntyre**, personally appeared, proved to me through satisfactory evidence of identification, which was ☒ photographic identification with signature issued by a federal or state governmental agency, ☐ oath or affirmation of a credible witness, ☐ personal knowledge of the undersigned, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose, as **Manager of MB Realty Group, LLC**, as the voluntary act of the limited liability company.




(official signature and seal of notary)

Notary Public: LEONARD F GIOVENCO

My Commission Expires:

8-15-2023

Exhibit A

LEGAL DESCRIPTION

Property Address: 10 Sunnyside Avenue, Arlington, Massachusetts

The land together with the buildings thereon in Arlington, Middlesex County, Massachusetts, bounded and described as follows:

Lot A shown on plan entitled "Land in Arlington, Mass., Owned by Grace S. Russell", dated October 25, 1905 by Dana E. Perkins, Surveyor, recorded with said Deeds, Book 3202, Page End, EXCLUDING THEREFROM a 10 foot wide strip of land on the northeasterly side of locus as set forth in Deed of Adler M. B. Hanson et al, dated November 29, 1956, recorded the Middlesex County Southern District Registry of Deeds in Book 8863, Page 437.

10 SUNNYSIDE AVENUE

List of Requested Waivers

Pursuant to 760 CMR 56.05(2)(h), the Housing Corporation of Arlington (hereinafter referred to as the “Applicant”), submits the following list of waivers, so-called, to “local requirements and regulations,” including without limitation the Town of Arlington Zoning Bylaw, as amended, Article 16 – Tree Protection and Preservation Bylaw, and other local regulations and requirements as defined in M.G.L. c.40B, §56.02, including all local rules, ordinances, codes and regulations that are more restrictive than state requirements.

LIST OF WAIVERS

<i>By-law Regulation</i>	<i>Requirement</i>	<i>Proposed</i>	<i>Waiver</i>
By-law Section 5, Subsection 5.3.17	For buildings more than 3 stores in height, a 7.5 step back shall be provided at the fourth story or 30 feet above grade, whichever is less, along all building elevations with street frontage.	No step back.	Waiver requested – See Footnote “1”.
By-law Section 5, Table 5.5.2.A	Rear setback 10+ (L/10) 24’.	5’	Waiver requested – See Footnote “1”.
By-law Section 5, Subsection 5.3.21.A.2.D	10% minimum landscape, 20% minimum usable open space.		Waiver requested. See Footnote “1”.
By-law Section 6, Subsection 6.1.12 and the Bicycle Parking Design Guidelines	Long term: 1.5 spaces per residential unit and 0.2/1000 gsf spaces for office use. Short-term 0.1 per residential unit and 0.5/1000 gsf spaces for office use for a total of 70 spaces.	The Applicant proposes 43 spaces. The applicant seeks a waiver from the Bicycle Parking Design Guidelines.	Waiver requested – See Footnote “1”.
By-law Section 6, Subsection 6.1.4	1.15 spaces per 1 bedroom dwelling unit, 1.5 spaces per 2 bedroom dwelling unit, and 2 spaces per 3 or more bedroom dwelling units, 1 space per 500 square feet of office gross floor area.	One space per unit	Waiver requested reduction in parking to 25% of that required as permitted by Section 6, Subsection 6.1.5. See Footnote 1.

By-law Section 6, Subsection 6.1.11(C)(11)	Sizes of parking spaces.	To permit more than 20% of spaces to be sized for compact cars.	Waiver requested. See Footnote "1".
By-law Section 6, Subsection 6.1.11(C)(3)	Drive aisles size.	Reduction in drive aisles size.	Waiver requested. See Footnote "1".
By-law Section 6, Subsection 6.1.11(D)(1)-(6) By-law Section 5, Subsection 5.3.7(A) and (B)	Parking lot setbacks, landscaping and screening.	Modifications to parking lot setbacks, landscaping and screening.	Waiver requested. See Footnote "1".
Title IX, Article 3, Sections 4A and 4B – Enforcement and Fees	Town Fees and Charges – Department of Community Safety and Office of Building Inspector.	Fees and charges related to fire safety, building permits, plan reviews, occupancy permits, plumbing permits, gas fitting, infiltration and inflow fees and electrical permits.	Waiver requested allowing for 100% reduction of fees.
Comprehensive permit requirement	Provision of a statement of impact on Municipal Facilities.	A waiver as to the provision of this information.	Waiver requested. See Footnote "1".

FOOTNOTE

1. Absent waivers of these requirements, the proposed project would be uneconomical and the Applicant would be unable to secure financing for the construction of the proposed project. The project is 100% affordable with units offered at 60% of the AMI and 30% of the AMI.

10 Sunnyside Avenue, Arlington	No. of Units	43
USES		
Acquisition		
Acquisition: Land		
Acquisition: Building		\$3,677,156.25
Acquisition: Closing costs		
Acquisition Subtotal		\$3,677,156.25
Hard Costs		
Direct Construction Budget		\$14,861,050.00
Construction Contingency		\$743,052.50
Subtotal: Construction		\$15,604,102.50
Soft Costs		
Architecture & Engineering		\$1,183,625.00
Survey and Permits		\$60,000.00
Clerk of the Works		\$100,000.00
Environmental Engineer		\$5,000.00
Bond Premium		
Legal		\$190,000.00
Title and Recording		\$50,000.00
Accounting & Cost Cert.		\$85,000.00
Marketing and Rent Up		\$30,000.00
Real Estate Taxes		\$20,178.00
Insurance		\$85,000.00
Solar Panels		\$350,000.00
Appraisal		\$12,000.00
Security		\$25,000.00
Construction Loan Interest		\$700,000.00
Inspecting Engineer		\$50,000.00
Fees to: DHCD		\$7,000.00
Fees to: Syndicator		\$85,000.00
Market Study		\$16,000.00
Credit Enhancement Fees		\$50,000.00
Commissioning Fees		\$200,000.00
Other Financing Fees		\$200,000.00
Development Consultant		\$85,000.00
Other: Construction Testing/ Utilities/ PH Cert		\$180,000.00
Other: FFE		\$50,000.00
Soft Cost Contingency		\$150,863.88
Subtotal: Gen. Dev.		\$3,969,666.88
Subtotal: Acquis., Const., and Gen. Dev.		\$23,250,925.63
Capitalized Reserves		\$78,568.76
Developer Overhead		\$611,003.00
Developer Fee		\$611,003.00
Total Development Cost		\$24,551,500.39
TDC, Net		
Residential TDC per unit		\$570,965.13
SOURCES		
Private Equity:		
Developer's Cash Equity / Interim Income		
Tax Credit Equity (net amount)		\$9,750,000.00
Developer's Fee/Overhead, Contributed or Loaned		
Other Source: State Tax Credit Equity		\$2,905,000.00
Total Private Equity:		\$12,655,000.00
Public Equity:		
HOME Funds, as Grant		
Grant: Arlington CPA (Sponsor Loan)		\$750,000.00
Grant:		
Grant: North Suburban Consortium		\$637,500.00
Grant: Passive House Incentives		\$132,500.00
Total Public Equity		\$1,520,000.00
Subordinate Debt:		
Home Funds-DHCD, as Subordinate Debt		\$4,300,000.00
Source: Blend of HIF, HSF, AHTF, etc. (max \$100k per unit)		
Mass Housing Subsidy		
Source:		
Subordinate Debt		\$1,114,173.00
Source: FHLB of Boston		
Subordinate Debt		
Source:		
Subordinate Debt		
Source:		
Total Subordinate Debt		\$5,414,173.00
Permanent Debt (Senior):		
Mass Housing		
MHFA		
MHP Fund Permanent Loan		
Other Permanent Senior Mortgage		\$4,962,327.39
Source:		
Other Permanent Senior Mortgage		
Source:		
Total Permanent Senior Debt		\$4,962,327.39
Total Permanent Sources		\$24,551,500.39
Delta Sources and Uses (Gap/Surplus)		\$0.00
Construction Period Financing:		
Construction Loan		\$17,186,050.27

10 SUNNYSIDE AVENUE
Arlington, MA 02474

IMPACT ANALYSIS REPORT

Submitted to:
Town of Arlington

Applicant:
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Arlington, MA 02474

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Civil Engineer:
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utile



**Housing
Corporation
of Arlington**

samiotes

March 9, 2023

10 SUNNYSIDE AVENUE
Arlington, MA 02474

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10 SUNNYSIDE AVE. ARLINGTON, MA IMPACT REPORT AND STORMWATER MANAGEMENT NARRATIVE

February 2023

1. Introduction

10 Sunnyside Ave. is a proposed residential building to be located at 10 Sunnyside Avenue in Arlington, MA (Zoning District: B4 – Vehicular Oriented Business). The project is an affordable housing building consisting of a proposed 49,000 gross square foot (GSF) 5-story new building with 43 residential units. The project is an infill redevelopment of an existing 16,500 sf (.38 acre) lot. Additionally, the project will create a stormwater management system as part of the site improvements surrounding the building, including vehicular parking spaces and covered bicycle parking spaces.

1.a Project Overview

The proposed project will redevelop a parcel currently occupied by a vacant auto repair building and neglected site to allow for the construction of a 43-unit affordable housing building. As noted above, the site will be an infill redevelopment of an existing 16,500 sf (.38 acre) parcel. A new covered parking area will be located in the northeast and northwest portions of the site's ground floor. Stormwater management for the proposed project is designed to mitigate the peak stormwater rate of runoff resulting from the full build-out of the project. Though the site hosted an auto body shop, the soils were found to be not contaminated.

Aligning with the town's Master Plan and Housing Plan, the project includes the following:

- 43 apartments: (16) 1-bedroom; (20) 2-bedroom; (7) 3-bedroom
- 21 Car Parking (.49 per unit)
- Min. 43 bike parking spaces (at least 1 per unit)
- New sidewalk to support walkable public realm
- Roof deck garden of ~ 2,000 square feet
- Community room
- Highly energy efficient; Passive House certified
- Rooftop Photovoltaic Panels
- 100% affordable with maximum household income of 60% AMI and units in reserve for 30% AMI

2. Existing Site Conditions

2.a Physical Environment

The existing project site is 16,500 sf in size with a 150 foot existing street frontage. It is bounded by Sunnyside Avenue to the southeast, an industrial service building to the northeast, the Beth Israel Lahey Medical Center and retail developments to the northwest and retail building to the southwest. The existing site consists of an automotive repair shop with primarily impervious land coverage areas. The impervious areas consist of an existing building along the southwest side, parking to the northeast, an access drive, walkways, ramps, and retaining walls starting from the building at the west corner of the site, running along the perimeter to the east corner of the site at

Sunnyside Avenue. The pervious areas include grassed/ landscaped areas along the perimeter of the site. There is a debris/soil pile in the middle of the lot.

In the current conditions, the site has minimal stormwater management control and treatment. The on-site tributary stormwater from the building is managed/ conveyed by roof drains and piped underground. The stormwater from the surrounding site sheets overland into Sunnyside Avenue to the east.

The existing slopes range from 1% to 5% where the overall grade slopes at approximately 1% toward Sunnyside Ave.

The Alta Land Title Survey, prepared by CHA Consulting, Inc., illustrates the existing site, including surface features, topography, utilities, and landscaping.

There are no trees located in the site, and no tree removal during construction. Refer to the existing conditions survey. There are no significant environmental features in the site, such as ledge outcrops, scenic views, or large trees.

Regional Context

Land use surrounding the property is primarily populated by retail and commercial establishments. Other nearby land use includes a medical facility, fitness center, industrial service company, Alewife Greenway Bike Path, and a residential neighborhood. Figure SKCE-001 (Site Locus Plan included in the Appendix) depicts the context of the property in relation to the surrounding area.

2.b Habitats, Species of Concern

The site will not have an adverse impact on wildlife or species of concern. This site is not deemed a habitat (priority or estimated) of rare wildlife per the Natural Heritage & Endangered Species Program (see Figure SKCE-004 in the Appendix of this report).

The property is located along Sunnyside Ave, and is bounded by commercial development on its sides and a paved parking lot to the rear. As noted below (2.c), the site is predominately impervious and there are no plantings or trees on the site.

Given the existing site condition and urban landscape context of the site, wildlife habitat function is limited. To the extent wildlife habitat exists along the Alewife Brook corridor, the site is separated by Sunnyside Ave, commercial properties, and parking lots.

2.c Recreation & Open Space Amenities

Under existing conditions, the site hosts the following:

- Existing auto shop, 4,625 sf footprint
- Concrete ramp to sub-grade level at body shop
- Remainder paved area with a 2,800 sf debris pile, approximately 5-feet high

There are no existing trees on the site. There are no existing open space amenities on the site.

Given the nature of this project as an infill redevelopment for housing, the building will occupy 85% of the site. The project proposes to provide a planted second level deck that is connected to the community room as an outdoor amenity to residents and guests who are reserving said community room. This rooftop deck will be 2,000 sf in area. Plantings will be small native trees, native shrubs and native ornamentals.

The project proposes the creation of new sidewalks along the front of the building and will work with the town to tie into future sidewalks along the west of Sunnyside Ave. There will be new native trees along the sidewalk, and new native plantings adjacent to the building entrance. This is consistent with the goals of the Arlington Master Plan as it relates to providing a walkable urban realm.

The site enjoys proximity to great natural outdoor spaces. 10 Sunnyside is located very close to the Alewife Greenway Bikepath, the Alewife Brook, and St. Paul's Cemetery. Outdoor sports and activities amenities, including a playground, baseball fields, tennis courts, and Dilboy Pool & Stadium, located along the Greenway to the east of the site, are all within 5-10 minutes walking time. North Union and Crosby Parks are within 0.5 mile of the site (see Appendix 07)

2.d Wetlands, Bodies of Water

The site is located approximately 400 feet to the west of Alewife Brook, and approximately 0.5 mile south of Mystic River. The site is outside of the floodplain overlay district and wetland district per Sections 5.7 and 5.8 of the Arlington Zoning Bylaw. (see Figures SKCE-003 and SKCE-006 in the Appendix).

2.e Historic & Cultural Resources

There are no cultural or historic resources on the site. The project will not have any adverse impact on Arlington Historic or Cultural Resources. (See Appendix 08, MACRIS Map)

3. Water and Soils

3.a Existing Soils

Soil types have been identified based on the information contained in the Soil Report (see Soil Report within appendices of this report). Based on the available soil information provided in the appendices of this report, we have determined that the soils are consistent with Hydrologic soil type "B" which require runoff to be infiltrated (as listed in the table below) from new impervious areas. The soils report is located in the Appendix of this report. The infiltration on the site was determined by using the value of a "B" soil from the MA Stormwater Handbook Rawl's Rates.

3.b Erosion & Sediment Control

Disturbed areas during construction will be protected by temporary erosion control measures to control erosion at its source with temporary control structures, minimize the runoff from areas of disturbance, and de-concentrate and distribute stormwater runoff through natural vegetation before discharging offsite.

3.c Stormwater Management

Stormwater runoff from the building rooftop will be conveyed to the Infiltration System under the garage floor where it will recharge the groundwater through infiltration. An overflow will be

provided to a drywell under the garage floor prior to connecting to an existing stormwater pipe in the east corner of the lot.

The objective of the stormwater management for the site is to mitigate any increase in peak storm runoff rates, while meeting/exceeding established stormwater quality thresholds, due to the construction of the proposed project. Outlined below are several Best Management Practices (BMP's) that are proposed to be incorporated into the overall stormwater design.

Proposed Stormwater Control Systems:

The following are the proposed Best Management Practices (BMP's) stormwater control systems to be used on the site to mitigate an increase in peak stormwater runoff and improve water quality:

Subsurface Structures (Infiltration Chambers): Subsurface structures are underground systems that capture runoff, and gradually infiltrate it into the groundwater. There are a number of underground infiltration systems that can be installed to enhance groundwater recharge. Subsurface structures are constructed to temporarily store stormwater and promote infiltration into the underlying soils. They are feasible only where the soil is adequately permeable and the high groundwater table and/or elevation is sufficiently below the bottom of the system. They can be used to control the quantity as well as treat stormwater runoff, if properly designed and constructed. The structures serve as storage chambers for captured stormwater, while the soil matrix provides treatment.

Drywell: A drywell (also known as leaching catch basin) is a pre-cast concrete barrel and riser with an open bottom that permits runoff to infiltrate into the ground. An 80% TSS removal is awarded to the deep sump catch basin/leaching catch basin pretreatment combination provided the system is off-line.

Watershed Routing

Below is a summary of the various existing and proposed watersheds with a brief narrative describing the routing. The descriptions of the watersheds are depicted in sketches Ex-HYD and P-HYD located in the Appendix.

Existing Watersheds:

Ex-Watershed-1: This watershed includes the entire project site which generally slopes from west to east. The impervious areas include the building, concrete ramps, paved parking lot, driveway, walkways and walls. Pervious areas include planters and landscaped areas. Stormwater runoff from this watershed is conveyed/sheet flows towards the existing catch basin in Sunnyside Avenue west of the site depicted as POA-1.

Proposed Watersheds:

PR-Watershed-1: This watershed consists of the majority of the 10 Sunnyside Ave. site including all the building roof, and paved pedestrian walkways. The stormwater runoff within the roof of the building /parking garage is conveyed by the roof leaders and piped to the underground infiltration system made of HDPE chambers. The infiltration chambers outlet to a drywell in the east corner of the site before tying into the existing 10" PVC pipe at the property line.

PR-Watershed-2: This watershed consists of a small area to the east of the building with the impervious areas consisting of the driveway to the parking garage and concrete sidewalks. Pervious area within this watershed includes landscaped areas surrounding the perimeter of the site. The stormwater runoff within this watershed will sheet flow to the existing catch basin in Sunnyside Avenue.

Analysis:

The analysis was based on the pre- and post-development peak discharge rates at the Point of Analysis. The proposed construction of 10 Sunnyside Ave. will result in an increase in impervious area, therefore the proposed stormwater management system will be designed to mitigate any increase in the rate of runoff and improve stormwater quality. Rainfall amounts used for the design and analysis are based on the NOAA Atlas 14+ Point Precipitation Frequency Estimates for Arlington.

Results/ Summary

Results of Analysis:

Through the use of the HydroCAD Software, the curve numbers, times of concentrations, and peak discharge rates were determined for both the existing conditions and the proposed conditions. The results of the study shows that both the post-development peak rates of runoff are equal or less than the existing rates.

As shown in Table A, the post development peak rates of runoff from the site will be mitigated.

Table A – POA 1 Sunnyside Ave Peak Rates of Runoff (cfs)				
	2-year storm	10-year storm	25-year storm	100-year storm
Existing	1.16	1.86	2.29	2.96
Proposed	0.70	1.15	1.45	2.39

Untreated Stormwater

The project is designed so that stormwater conveyances (outfalls/discharges) do not discharge untreated stormwater.

Post-development peak discharge rates

The proposed project will result in an increase in impervious area. The proposed stormwater management system has been designed so that there is no increase in post construction discharge rates from the site. See Table A above.

Recharge to groundwater

Loss of annual recharge to groundwater shall be eliminated or minimized through the use of environmentally-sensitive site design, Low Impact Development techniques, stormwater best management practices, and good operation and maintenance. At a minimum, the annual recharge from the post- development site shall approximate the annual recharge from

pre-development conditions based on soil type. This Standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.

Soil types have been identified based on the information contained in the Soil Report. We have determined that the soils are consistent with Hydrologic soil type "A" "B" "C" and "D" which requires runoff to be infiltrated (as listed in the table below) from new impervious areas.

The proposed development will result in an increase in impervious area in the "B" soil areas. Therefore, 0.35 inches of runoff will be required to be infiltrated for the new impervious areas.

Hydrologic Group Volume to Recharge (x Total Impervious Area)	
Hydrologic Group	Volume to Recharge x Total Impervious Area
A	0.60 inches of runoff
B	0.35 inches of runoff
C	0.25 inches of runoff
D	0.10 inches of runoff

Required Recharge Volumes:

"B" Soils

Infiltration Rate: 0.35 inches of runoff
 Proposed Site New Impervious Area in "B" Soils: 3,310 sf
 $3,310 \text{ sf} \times 0.35 \times (1/12) = 97 \text{ cf}$

Total required recharge volume (unadjusted): 97 cf

Proposed Recharge Volume:

Infiltration System #1 = 235 cf
 Drywell #1 = 11 cf

Total provided recharge volume: 246 cf

Drawdown Time:

INF-1 (maximum time 72 hours)= $235 \text{ cf} / (1.02 \text{ in/hr} \times 650 \text{ sf} / 12 \text{ in/ft}) = 4.25 \text{ hour}$
 Drywell-1 (maximum time 72 hours)= $11 \text{ cf} / (1.02 \text{ in/hr} \times 23.76 \text{ sf} / 12 \text{ in/ft}) = 5.45 \text{ hour}$

TSS removal

The site watersheds contain "clean" roof runoff areas that are excluded from this calculation.

Water Quality Volume:

The stormwater management system has been sized to treat for the 0.5" runoff rate applied to the total impervious area for the water quality volume, as shown in the calculations provided below. The calculations for the infiltration stormwater BMPs are shown below. Where site topography and groundwater elevation precluded the use of infiltration BMPs, proprietary water quality unit are proposed which are specifically designed to address water quality prior to discharge. The areas considered "clean" roof runoff have been excluded from this calculation.

Impervious area requiring water quality treatment= 32 sf
 $32\text{sf} \times .04165 \text{ ft} = 2 \text{ CF}$

Total Water Quality Volume Required = 2 CF

Proposed Water Quality Volume:
Infiltration System #1 = 235 cf
Drywell #1 = 11 cf

Higher potential pollutant loads

The proposed project site does not contain Land Uses with Higher Potential Pollutant Loads. The site improvements aim to reduce the potential pollutant loads from the existing automotive mechanic building to a residential building.

Protection of critical areas

Critical areas are Outstanding Resource Waters (ORW) as designated in 314 CMR 4.00, Special Resource Waters as designated in 314 CMR 4.00, recharge areas for public water supplies as defined in 310 CMR 22.02 (Zone Is, Zone IIs and Interim Wellhead Protection Areas for groundwater sources and Zone As for surface water sources), bathing beaches as defined in 105 CMR 445.000, cold-water fisheries as defined in 314 CMR 9.02 and 310 CMR 10.04, and shellfish growing areas as defined in 314 CMR 9.02 and 310 CMR 10.04.

The site is not located within critical areas.

Construction Period Pollution Prevention and Erosion and Sedimentation Control

Soil Erosion and Sediment Control Plan:

The objectives of the Soil Erosion and Sediment Control Plan are to control erosion at its source with temporary control structures, minimize the runoff from areas of disturbance, and de-concentrate and distribute stormwater runoff through natural vegetation before discharge to critical zones such as streams or wetlands. Soil erosion control does not begin with the perimeter sediment trap. It begins at the source of the sediment, the disturbed land areas, and extends down to the control structure.

The Soil Erosion and Sediment Control Plan will be enacted in order to protect the resource areas during construction. The erosion control devices will remain in place until all exposed areas have been stabilized with vegetation or impervious surfaces.

The objective of the Soil erosion & Sediment Control Plan that will be enacted on site is to control the vulnerability of the soil to the erosion process or the capability of moving water to detach soil particles during the construction phase(s).

Operation/Maintenance plan

An Operation and Maintenance plan for both construction and post-development stormwater controls has been developed. The plan includes owner(s); parties responsible for operation and maintenance; schedule for inspection and maintenance; routine and non-routine maintenance tasks. A copy of the O&M is included in the Appendix.

4. Demonstration of Compliance with Arlington's Master Plan Housing Production Plan, and Open Space and Recreation Plan

Arlington Master Plan

The project supports Arlington's Master Plan through the following:

- Enhancing the quality of the built environment by redeveloping a vacated light-industrial lot with a multi-family building, contributing to the residential community of Sunnyside Ave near Broadway.
- Providing mixed-use affordable development with housing options for different incomes, family sizes, and needs.
- Contributing to the small-business economic vibrancy of Sunnyside Ave and Broadway which contains several small businesses.
- Proposed sidewalk and planting enhance the quality of the built environment and pedestrian realm along Sunnyside.
- Increase traffic safety along Sunnyside through construction of curbed sidewalks building security features. The team will work with the town to promote public street safety features for pedestrians.
- Supporting the use of bicycles through ample and diverse bicycle storage units.
- Design to meet high-performing PHIUS certification
- Planting native species along sidewalks and second level deck.
- Creating affordable housing development that has easy access to Alewife Brook, the Alewife Brook Bike Path, and the many outdoor recreation features along the brook's corridor.
- No adverse impact to wildlife or open spaces.

Arlington Housing Production Plan

The project supports Arlington's Housing Production Plan through the following:

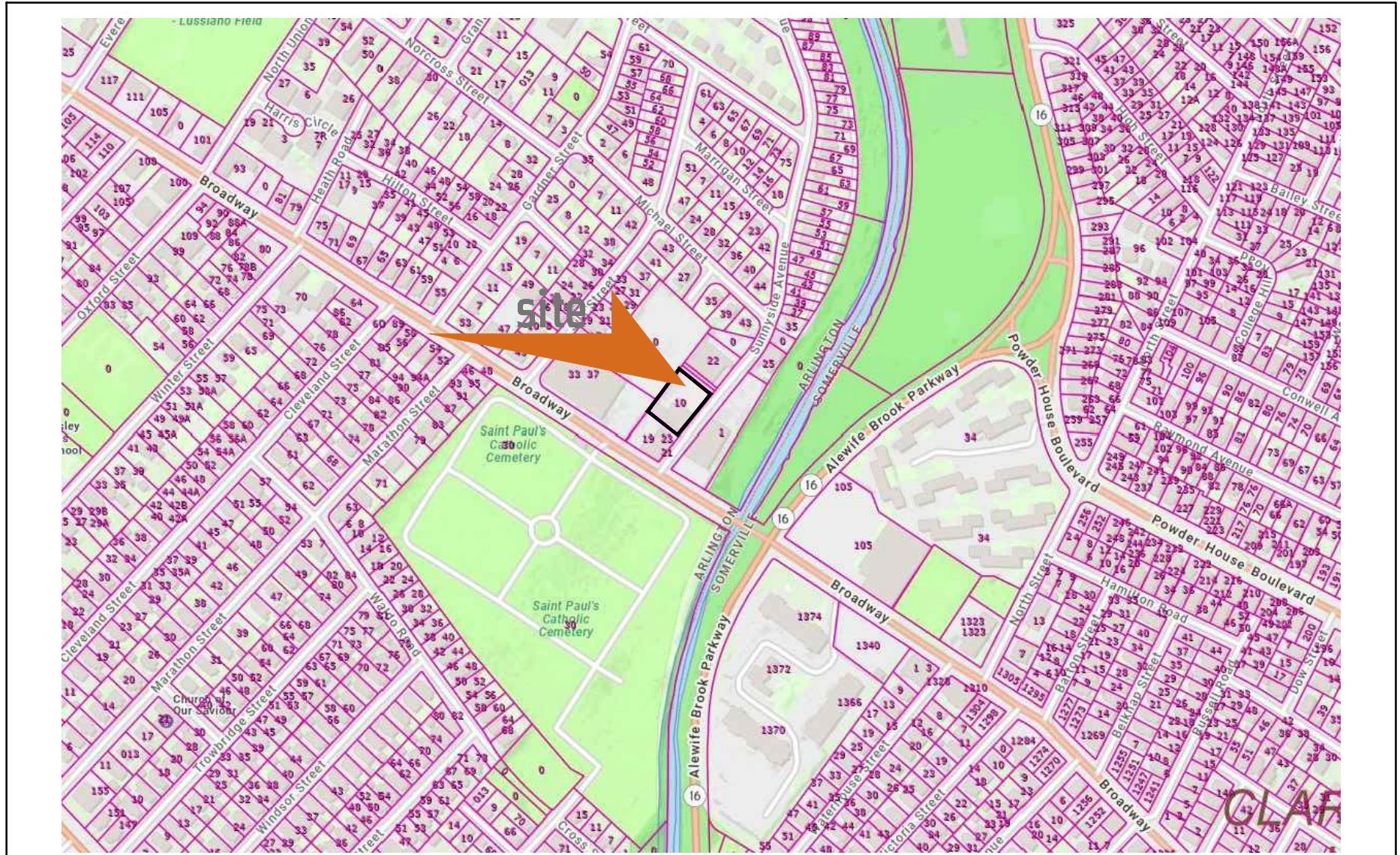
- Contributes 43 units towards the town's Chapter 40B 10% affordable housing minimum
- Proposes multifamily residential along business-oriented zone of the Broadway corridor
- Responds to town's zoning revisions for multifamily residential in a business district, which came from the production plan
- Offers diversity of unit types and sizes to support demographic diversity
- Offers significant level of affordability:
 - Maximum household income: 60% AMI
 - \$67,320 for household of 2
 - \$84,120 for household of 4
 - Some units reserved for maximum incomes of 30% AMI
 - \$33,650 for household of 2
 - \$42,050 for household of 4

- Sustainable redevelopment of an existing lot along Broadway corridor near Mass Ave.

Arlington Open Space and Recreation Plan

The project supports Arlington's Housing Production Plan through the following:

- Adheres to town's regulatory policy centering on redevelopment.
- Adheres to town goals of environmental sensitivity to enhance the natural environment.
- Adding street trees to increase the town's tree canopy
- Working with the town to create safe pedestrian sidewalks along Sunnyside, which in turn increases safe walking routes to Alewife Brook and the Bike path
- Implementing Stormwater management on the site
- Affordable housing to be provided on a site that is very close to Open Space / Recreational Areas in EJ Area – Map #3 in Table 4-8 of the Housing Production Plan



Sketch No. SKCE-001
Reference Drawing -

Job #:	52094.00
Drawn by:	DJS
Scale:	NTS
Date:	02-13-23

Project: SUNNYSIDE HEIGHTS

Title: REGIONAL CONTEXT MAP

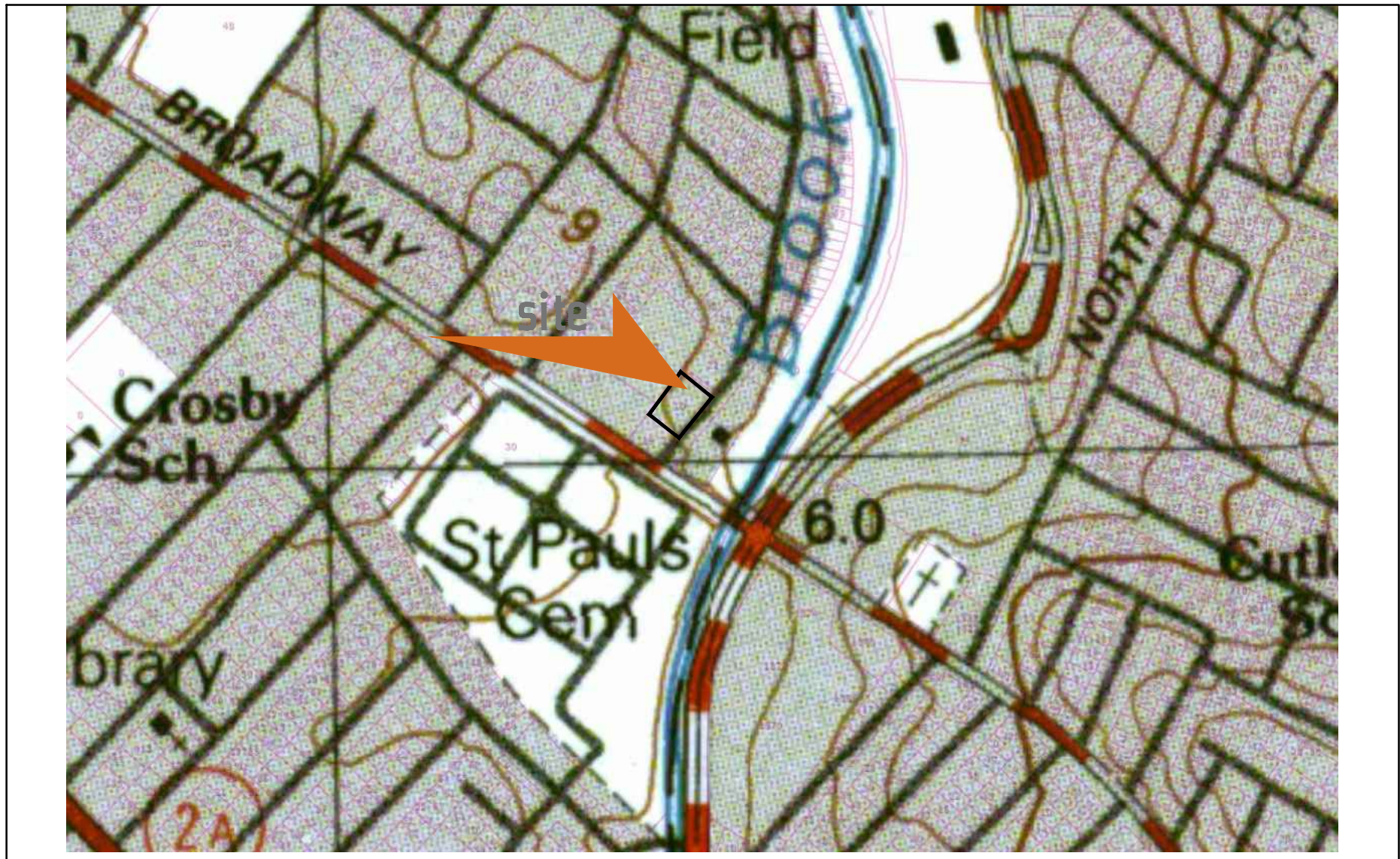
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Sketch No.
SKCE-002

Reference Drawing
-

Job #: 52094.00

Drawn by: DJS

Scale: NTS

Date: 02-13-23

Project: SUNNYSIDE HEIGHTS

Title: USGS TOPO MAP

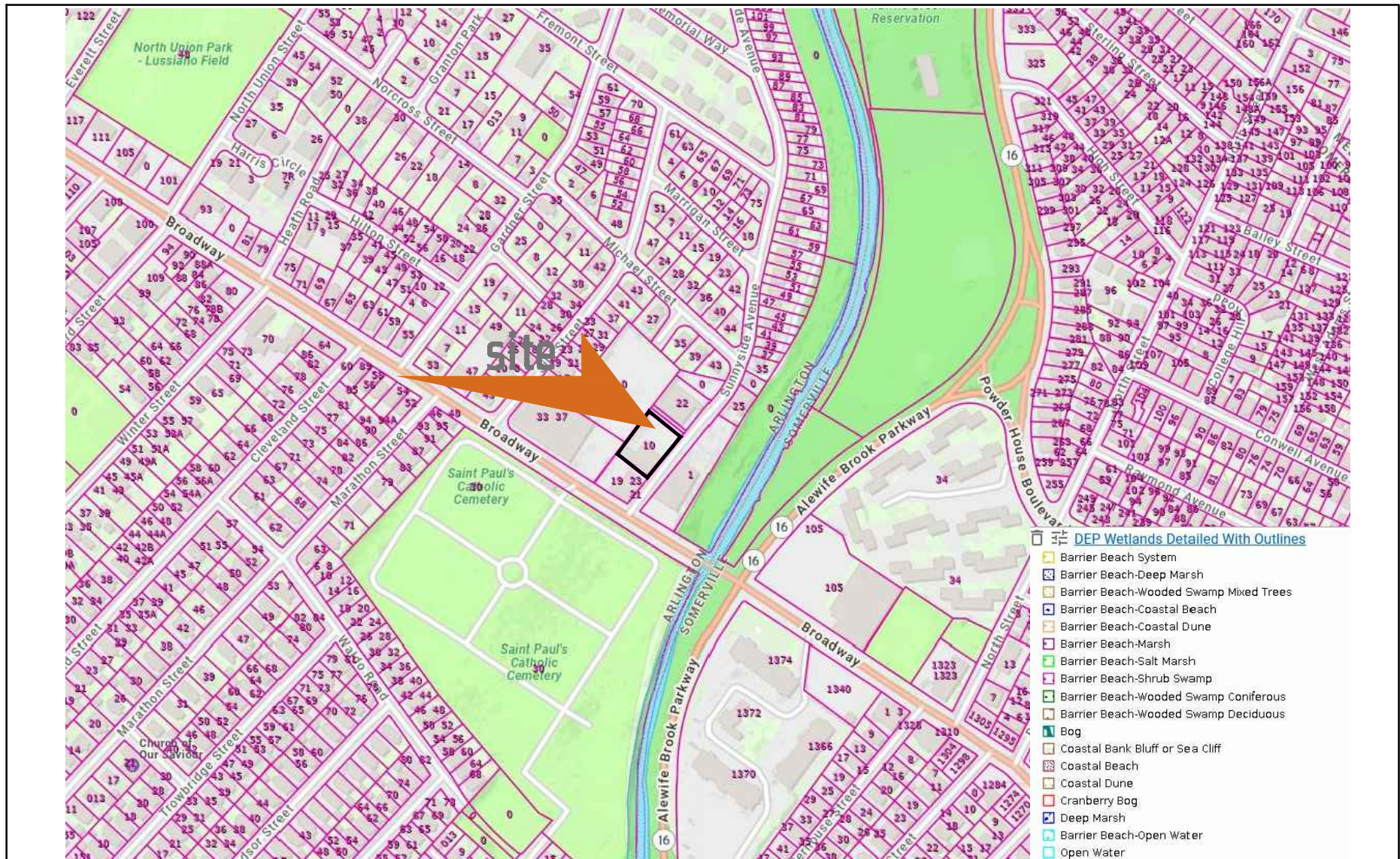
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Sketch No.
SKCE-003

Reference Drawing
-

Job #: 52094.00

Drawn by: DJS

Scale: NTS

Date: 02-13-23

Project: SUNNYSIDE HEIGHTS

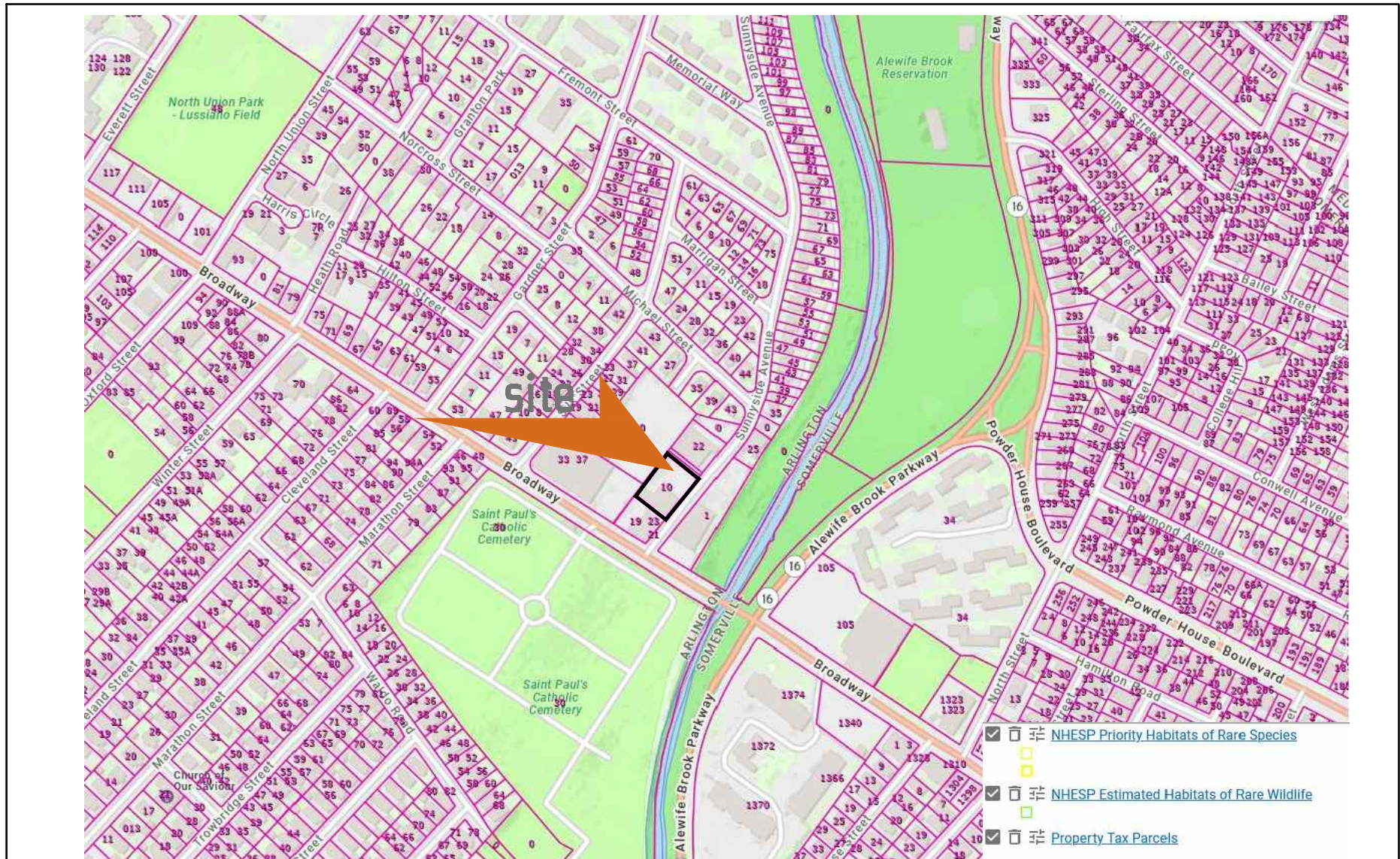
Title: RESOURCE AREAS MAP

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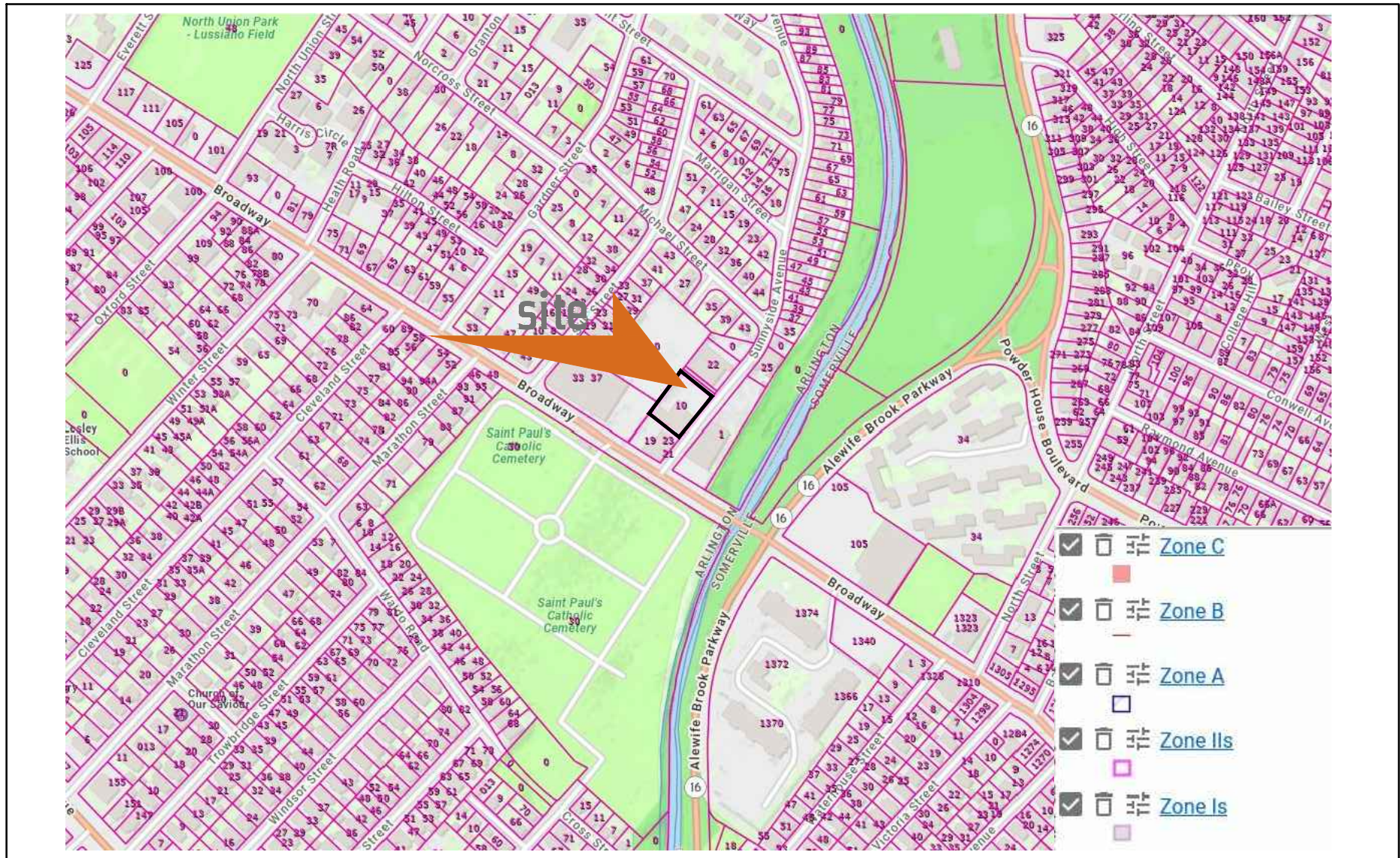
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Reference Drawing -

Job #:	52094.00
Drawn by:	DJS
Scale:	NTS
Date:	02-13-23

Project:	SUNNYSIDE HEIGHTS
Title:	NHESP MAP

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Sketch No.	SKCE-005
Reference Drawing	-

Job #:	52094.00
Drawn by:	DJS
Scale:	NTS
Date:	02-13-23

Project: SUNNYSIDE HEIGHTS

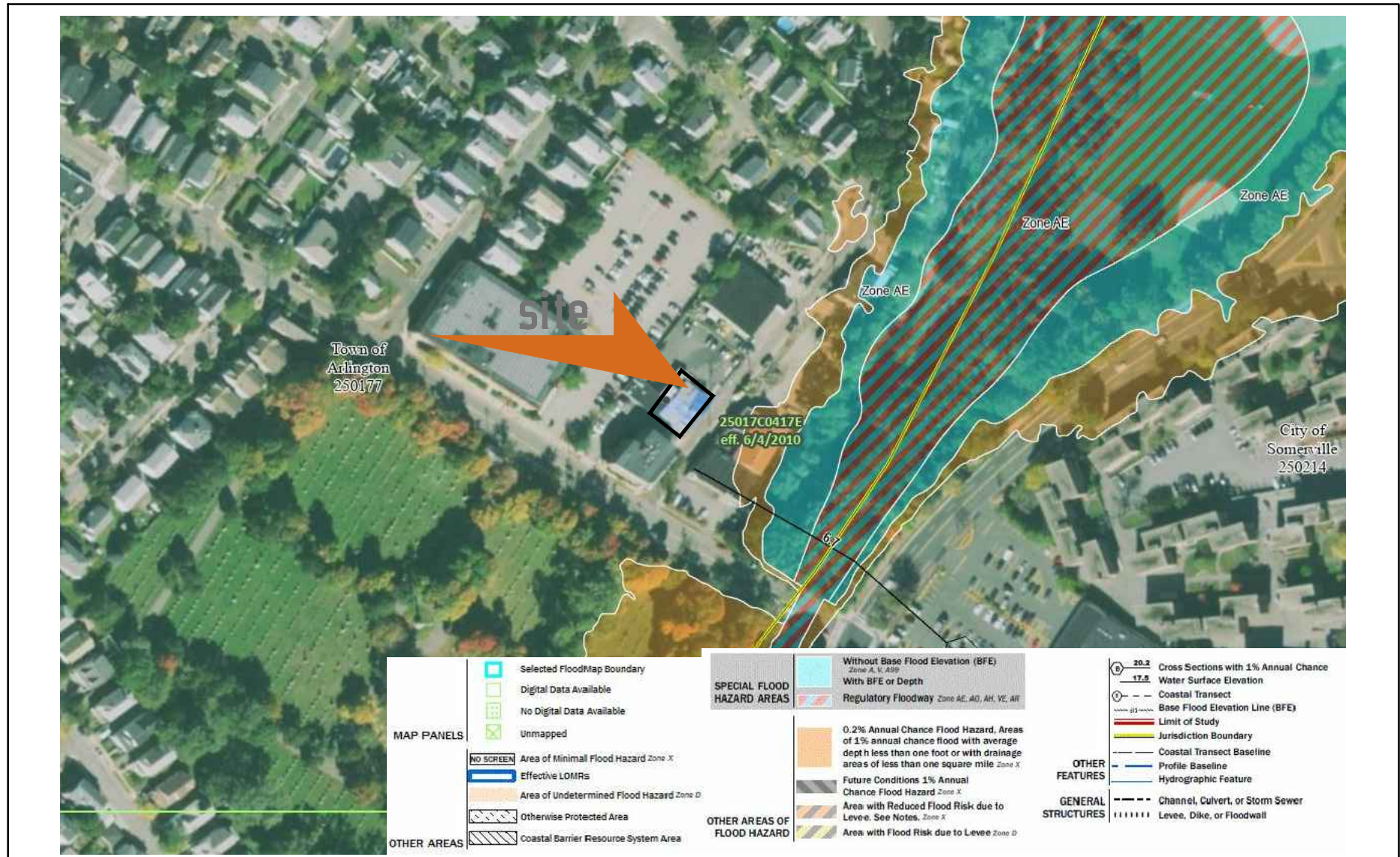
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ZONE B, ZONE C

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Reference Drawing
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Job #: 52094.00

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Scale: NTS

Date: 02-13-23

Project: SUNNYSIDE HEIGHTS

Title: FEMA FLOOD MAP

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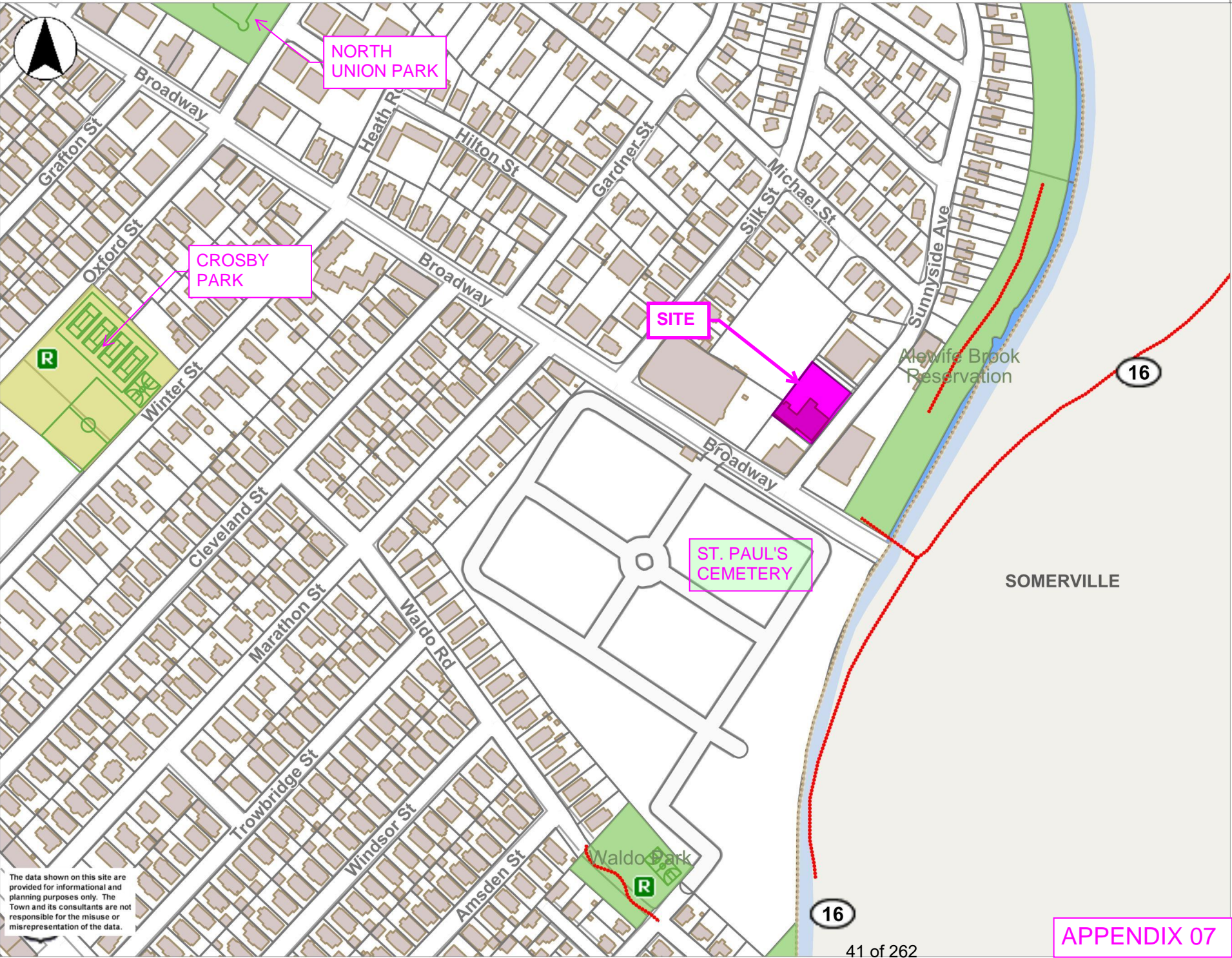
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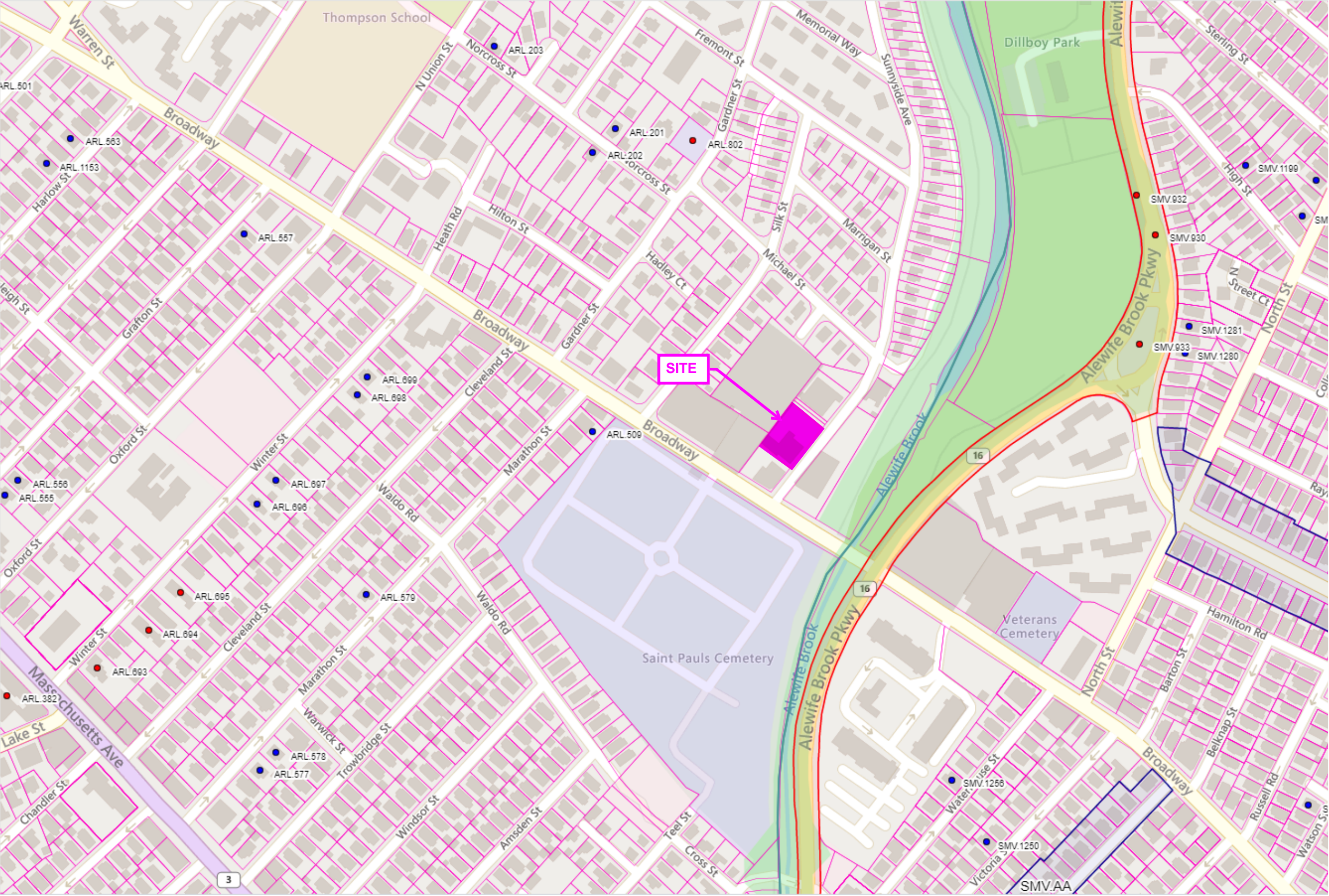
- Places by Category
- Police Station
 - Fire Station
 - School
 - Library
 - Public Works
 - Trails & Paths
 - Minuteman Bikeway
 - Other Trail or Path
 - Engineering - Traffic Signal
- Crosswalks - Location (black line)
- Recreation - Facilities
- Recreation - Fields Courts
- Recreation - Fields Courts
- Open Space: Conservation
- Open Space - Minuteman Trail
- Open Space - Labels
- Open Space
- Town, State, or Private
 - Other Town Owned
- MA Highways
- Interstate
 - US Highway
 - Numbered Routes
- Abutting Towns
- Town Boundary
- Parcels
- Buildings
- Cemetery - Roads
- Road1
 - Road2
 - Road3
 - Road4
- Pavement Markings
- Impervious Surface - For Building
- Street
 - Sidewalk
 - Street Island
 - Driveway
 - Parking Lot
 - Bike Path
- Roads - For Large Scale (feet)
- Roads - For Small Scale (feet)
- Major Road
 - Local Road
- Master Plan Base Map - M
- Water Line
- Water Body



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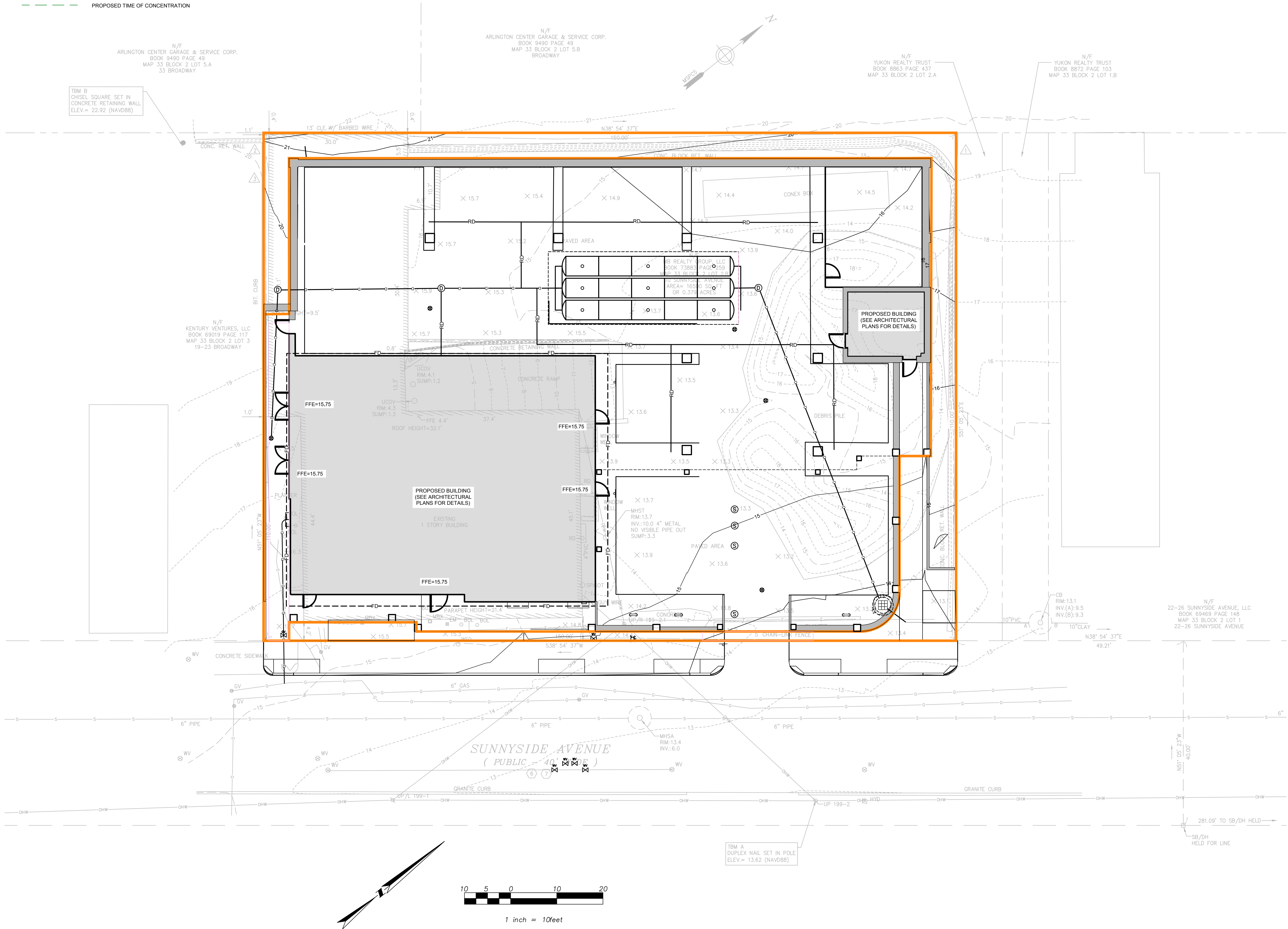
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APPENDIX 08
MACRIS Map

- MHC Inventory Areas**
- National Register Historic Places
 - Preservation Restriction
 - Local Historic District
 - Local Landmark
 - National Register Historic Places & Local Historic District
 - National Register Historic Places & Local Landmark
 - Massachusetts Historic Landmark
 - Inventoried Area
- MHC Inventory Points**
- National Register Historic Places
 - Preservation Restriction
 - Local Historic District
 - Local Landmark
 - National Register Historic Places & Local Historic District
 - National Register Historic Places & Local Landmark
 - Massachusetts Historic Landmark
 - Inventoried Property
- MHC Update Status**
- Updates Pending
 - Completed
- Building Structures (2-D)**
- Building Structures (2-D)
- Open Space**
- Conservation
 - Recreation
 - Recreation and Conservation
 - Agriculture
 - Habitat
 - Historical/Cultural
 - Scenic (Official Designation Only)
 - Water Supply
 - Flood Control
 - Underwater
 - Other
 - Unknown

LEGEND:
PROPOSED WATERSHED
PROPOSED TIME OF CONCENTRATION



10 Sunnyside Avenue

PROJECT

Housing Corporation of Arlington

OWNER

utile
ARCHITECTURE + URBAN DESIGN

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ARCHITECT

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STAMP

DATE REVISION

REVISIONS ON SHEET

SCALE
1" = 10'

Arlington, MA

PR-HYD

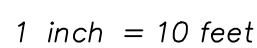
PR-HYD

OWNER

ARCHITECT

CIVIL

EX-HYD





Supplemental Traffic Impact Study

10 Sunnyside Avenue
Arlington, MA

December 8, 2022

Prepared for:

Housing Corporation of Arlington
252 Massachusetts Avenue
Arlington, MA 02474

Submitted by:

Nitsch Engineering
2 Center Plaza, Suite 430
Boston, MA 02108

Nitsch Engineering Project #15289.



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1 Executive Summary

Nitsch Engineering has prepared this Traffic Impact Study (TIS) for the proposed 40B housing development at 10 Sunnyside Avenue in Arlington, Massachusetts. The new development will comprise 43 low-income rental units with approximately 22 parking spaces. The development will also include 70 secured bicycle spaces in the building in addition to the 10 visitor bicycle spaces outside.

1.1 Trip Generation

The proposed development is anticipated to generate 207 daily trips, 15 weekday morning peak hour trips, and 20 weekday afternoon peak hour trips. Per the traffic volume data collected at the study area intersections, this does not represent a substantial increase in trips, during both the weekday morning and evening peak hours.

1.2 Parking

The Town of Arlington Parking Bylaws require one space per five units of affordable housing. The calculated parking demand for 40 units of affordable housing is 9 spaces. The 22 parking spaces exceeds the minimum nine spaces required by the Town of Arlington Parking Bylaws.

1.3 Analysis and Recommendations

We performed a vehicle capacity analysis to compare the weekday morning and weekday evening peak hours of the 2022 Existing conditions, 2029 No-Build conditions, and 2029 Build conditions for the study intersections. Under all conditions, the intersection of Alewife Brook Parkway and Broadway will operate poorly with most of the movements operating at LOS F. However, all movements for the study intersections in Build condition will continue to operate at the same levels of service as No-Build conditions with only minor increases in delay and queuing. The proposed new intersection of Sunnyside Avenue and the Site Driveway will operate at LOS A for all movements.

As the project is not anticipated to have a significant impact to traffic operations at the study intersections, no mitigation is recommended at this time.



2 Introduction

Nitsch Engineering has prepared this Traffic Impact Study (TIS) for the proposed 40B housing development at 10 Sunnyside Avenue in Arlington, Massachusetts. The new development will comprise 43 low-income rental units with approximately 22 parking spaces. The development will also include 70 secured bicycle spaces in the building in addition to the 10 visitor bicycle spaces outside.

This TIS will review existing roadway conditions, crash data, and traffic volumes, and it will analyze existing and future conditions at intersections in the study area to establish the impact the proposed development would have on traffic operations.

Figure 1 shows the Locus Map and Figure 2 shows the study area intersections.

2.1 Existing Site and Proposed Development

The project site, comprising approximately 16,500 square feet of land area, was previously occupied by an approximate 5,400-square-foot Automotive Center with an unstriped surface parking lot. The site is bounded by a commercial property to the north, an adult use marijuana dispensary to the south, Sunnyside Avenue to the east, and a commercial parking lot to the west.

The proponent proposes to modify and expand the existing site to develop 43 low-income residential units on site with approximately 22 parking spaces. Access to the site will remain as existing; one curb cut off Sunnyside Avenue.

2.2 Study Area

The study area includes the existing main three roadways, and three intersections within and adjacent to the project site.

Roadways

- Alewife Brook Parkway (Route 16)
- Broadway
- Sunnyside Avenue

Intersections

- Alewife Brook Parkway (Route 16) and Broadway (Signalized)
- Sunnyside Avenue and Broadway (Unsignalized)
- Sunnyside Avenue and Site Driveway (Unsignalized)



Figure 1: Locus Map
10 Sunnyside Avenue
Arlington, MA

Data Source: BingMaps
Nitsch Project #: 15289

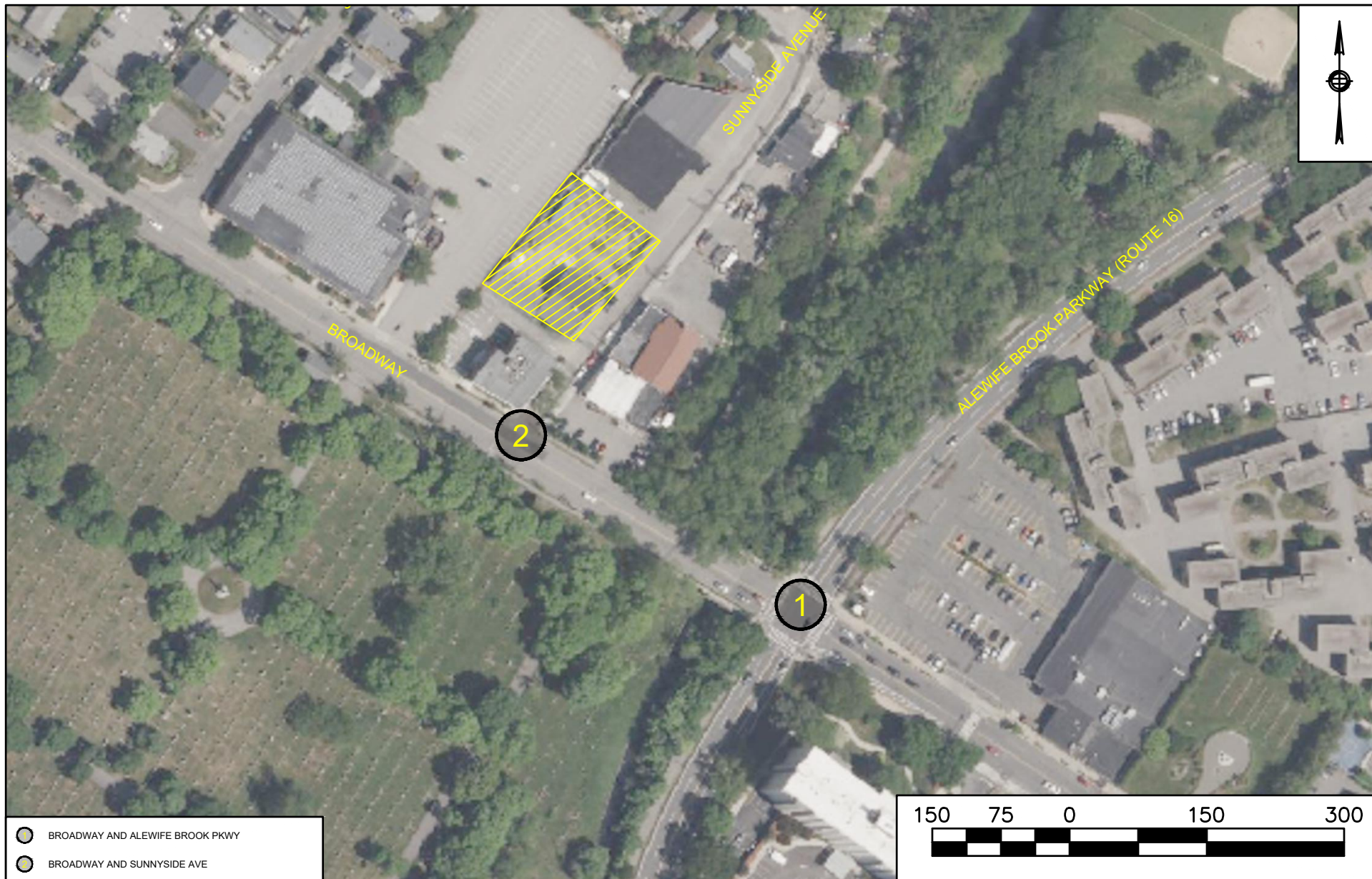


Figure 2: Study Area Intersections
 10 Sunnyside Avenue
 Arlington, MA



2.3 Methodology

The traffic analysis herein is summarized in the following sections:

1. An inventory of existing transportation conditions, including roadway capacities, parking, transit, pedestrian and bicycle circulation, and site conditions.
2. An evaluation of future transportation conditions and an assessment of potential traffic impacts associated with the Project and other neighboring projects. Long-term impacts are evaluated for the year 2029, based on a seven-year horizon from the 2022 base year. Expected roadway conditions and deficiencies are identified. This section includes the following scenarios:
 - a. The No-Build Scenario (2029) includes general background growth and additional vehicular traffic associated with specific proposed or planned developments and roadway changes in the vicinity of the Project site; and
 - b. The Build Scenario (2029) includes specific travel demand forecasts for the Project.



3 Existing Conditions

3.1 Roadways

Alewife Brook Parkway (Route 16)

Alewife Brook Parkway is classified as an Urban Principal Arterial under Department of Conservation and Recreation (DCR) jurisdiction. It runs in an approximate north-west direction and spans approximately 2.0 miles from its northern terminus at Mystic Valley Parkway to its southern terminus at Concord Avenue. Within the study area, Alewife Brook Parkway is approximately 38 feet wide and is a two-way, four-lane roadway carrying two lanes of travel in each direction. Parking is prohibited on both sides of the roadway along its entire length. Along the west side of the roadway from Mystic Valley Parkway to Massachusetts Avenue, there is a separated multi-use path. On the west side of the roadway, the Alewife Greenway Bikeway runs parallel to the roadway from Mystic Valley Parkway to Concord Parkway. On the east side of the roadway, there is a separated shared-use path from Massachusetts Avenue to Woodstock Street and again from Broadway to Mystic Valley Parkway. The posted speed limit on Alewife Brook Parkway is 30 miles per hour (mph).

Broadway

Broadway is classified as an Urban Principal Arterial under local jurisdiction. Broadway generally runs in an east-west direction and provides one travel lane in each direction. Within the study area, Broadway generally provides two 11- to 12-foot-wide travel lanes separated by a double-yellow centerline with no marked shoulders and parking provided intermittently along both sides. Sidewalks are provided along both sides of Broadway within the study area, with illumination provided by way of streetlights mounted on wood poles. The posted speed limit along Broadway is 25 mph. Land use within the study area consists of the Saint Paul's Cemetery and residential and commercial properties.


Sunnyside Avenue

Sunnyside Avenue is classified as a Local Access Roadway under local jurisdiction. Sunnyside Avenue generally runs in a north-south direction and provides one travel lane in each direction. Within the study area, Sunnyside Avenue provides an approximate 26-foot wide traveled-way with no marked centerline or shoulders provided and on-street parking permitted along both sides of the roadway. Sidewalks are provided along both sides of Sunnyside Avenue within the study area, with illumination provided by way of streetlights mounted on wood poles. A posted speed limit is not provided along Sunnyside Avenue and, as such, the statutory speed limit is 25 mph. Land use within the study area consists of residential and commercial properties.

3.2 Study Intersections

Alewife Brook Parkway (Route 16) and Broadway

The intersection of Alewife Brook Parkway (Route 16) and Broadway is a four-way, signalized intersection with Alewife Brook Parkway running north-south and Broadway running east-west. Both Alewife Brook Parkway approaches carry two approach lanes: one left-turn/through lane and one through/right-turn lane. Both Broadway approaches are striped as one left-turn/through/right-turn lane in each direction, but both act as two lanes: one left-turn/through lane and one through/right-turn lane. The Alewife Brook Parkway movements have their own phase, followed by an exclusive pedestrian phase, followed by the Broadway eastbound phase, and then the Broadway



westbound phase. There is a shared-use path on the north side of Alewife Brook Parkway at the intersection. Sidewalks are present at all approaches to the intersection and there are crosswalks present across all approaches.

Sunnyside Avenue and Broadway

The intersection of Sunnyside Avenue and Broadway is a three-way, unsignalized intersection with Broadway operating as a free movement through the intersection and Sunnyside Avenue under stop-control. Sunnyside Avenue runs north-south and Broadway runs east-west. Both the Sunnyside Avenue and Broadway approaches carry one approach lane. Note that the Broadway approach lanes are 22 feet wide and although are only striped as single lanes, they operate as two approach lanes to provide queuing storage for vehicles turning onto Sunnyside Avenue. Sidewalks are present at all approaches to the intersection however crosswalks are not present. Wheelchair ramps with detectable warning panels are provided at the northeast and northwest corners of the intersection.

Sunnyside Avenue and the Existing Site Driveway

The intersection of Sunnyside Avenue and the Site Driveway is a three-way, unsignalized intersection with Sunnyside Avenue operating as a free movement through the intersection. Sunnyside Avenue runs north-south and the Site Driveway runs east-west. Both the Sunnyside Avenue and Broadway approaches carry one approach lane. Sidewalks are present along both sides of Sunnyside Avenue.

3.3 Public Transportation

Public transportation services are provided within the study area by the Massachusetts Bay Transit Authority (MBTA) for Bus service. Within the study area, the MBTA operates the Route 87 – Clarendon Hill or Arlington Center - Lechmere Station. Route 87 stops at the Broadway/Sunnyside Avenue intersection; and provides a connection to Arlington Center, Clarendon Hill, Teele Square, Davis Station (MBTA Subway Red Line), Union Square, and Lechmere Station (MBTA Subway Green Line).

MBTA bus service operates Monday through Friday from approximately 5:07 AM to 1:40 AM, on Saturday from 5:15 AM to 1:35 AM, and on Sunday from 6:00 AM to 1:33 AM, with 30-minute-or-less headways on weekdays and Saturdays and 60-minute-or-less headways on Sundays. All MBTA buses are handicapped and wheelchair accessible.

4 Existing Traffic Conditions

4.1 Traffic Count Data

Turning Movement Count (TMC) Data

We retained Accurate Counts (AC) of North Reading, Massachusetts to collect traffic data within the study area, including both Automatic Traffic Recorder (ATR) counts and Turning Movement Counts (TMCs).

ATR Data

AC collected ATR counts for a continuous 48-hour period on Broadway between Sunnyside Avenue and Alewife Brook Parkway from Wednesday, November 2 to Thursday, November 3, 2022. We summarize the seasonally adjusted ATR counts in Table 1. (Section 4.2 discusses seasonal adjustment.) The original ATR data is included in Appendix A.

Table 1 – Automatic Traffic Recorder (ATR) Summary

Location	Period	ADT ^a		Peak Hour Traffic			K Factor ^e
		Volumes (vpd) ^b	Directional Distribution ^c	Period	Volumes (vph) ^d	Directional Distribution ^c	
Broadway, east of Sunnyside Avenue	Weekday	8,807	56% EB	Morning	628	55% EB	0.07
				Afternoon	772	54% EB	0.09
^a Average Daily Traffic; ^b Vehicles per day; ^c NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound; ^d Vehicles per hour; ^e Proportion of daily traffic							

TMC Data

AC collected TMC data at the two study intersections on Thursday, November 3, 2022. TMC data was recorded from 7:00 AM to 9:00 AM to capture the weekday morning traffic peak hours and from 4:00 PM to 6:00 PM to capture the weekday afternoon traffic peak hours. The counts included passenger vehicles, heavy vehicles, bicycles, and pedestrians. The peak hours within the study area were established as 7:00 AM to 8:00 AM during the morning period, and 5:00 PM to 6:00 PM during the afternoon period. The TMC data is included in Appendix A.

4.2 Seasonal Adjustment

Nitsch Engineering used the MassDOT 2019 Weekday Seasonal Adjustment Factors to establish if the traffic counts needed to be seasonally adjusted. The composition of the study area falls within “Group U4-7 Urban Arterials.” Counts within Group U4-7 collected during the month of November experience a value that is approximately 1% higher than an average month. Therefore, no seasonal adjustment factors were applied.

Figure 3 through 5 shows the 2022 existing peak-hour vehicular traffic, pedestrian, and bicycle volumes at the study intersections in the form of turning movements.

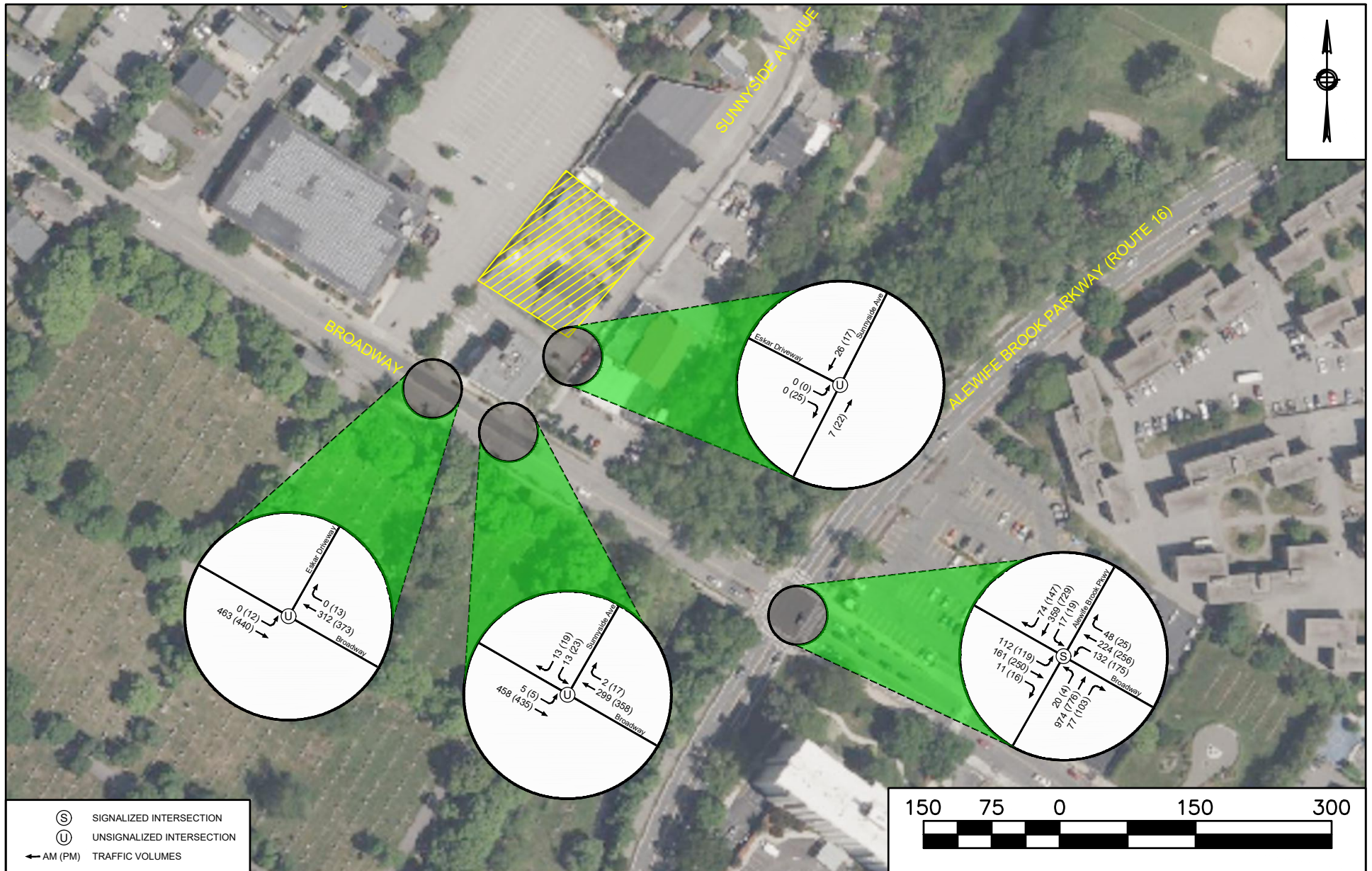


Figure 3: 2022 Existing Peak Hour Traffic Volumes
 10 Sunnyside Avenue
 Arlington, MA

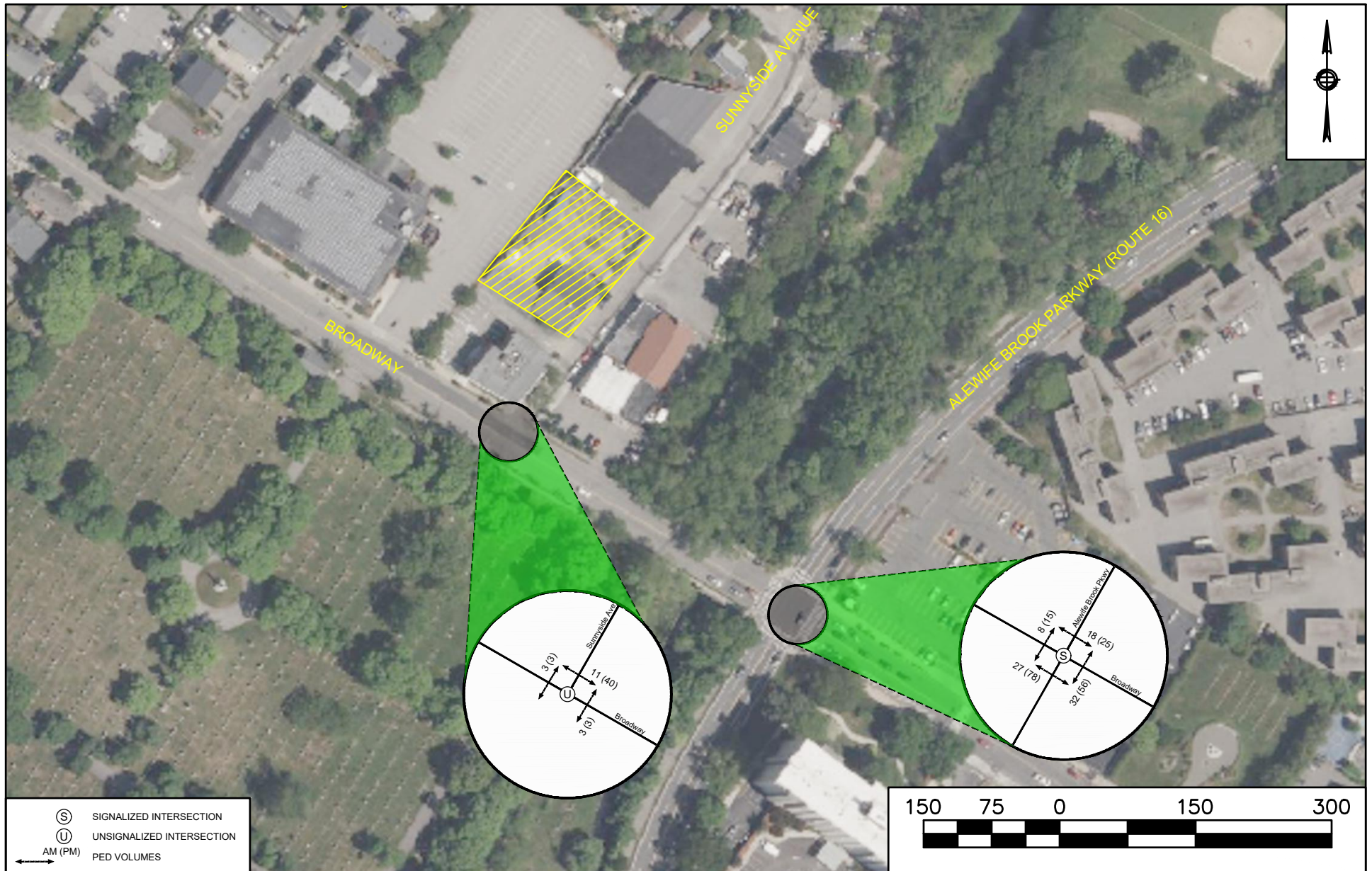


Figure 4: 2022 Existing Peak Hour Pedestrian Volumes

10 Sunnyside Avenue
Arlington, MA

Data Source: BingMaps
Nitsch Project #: 15289

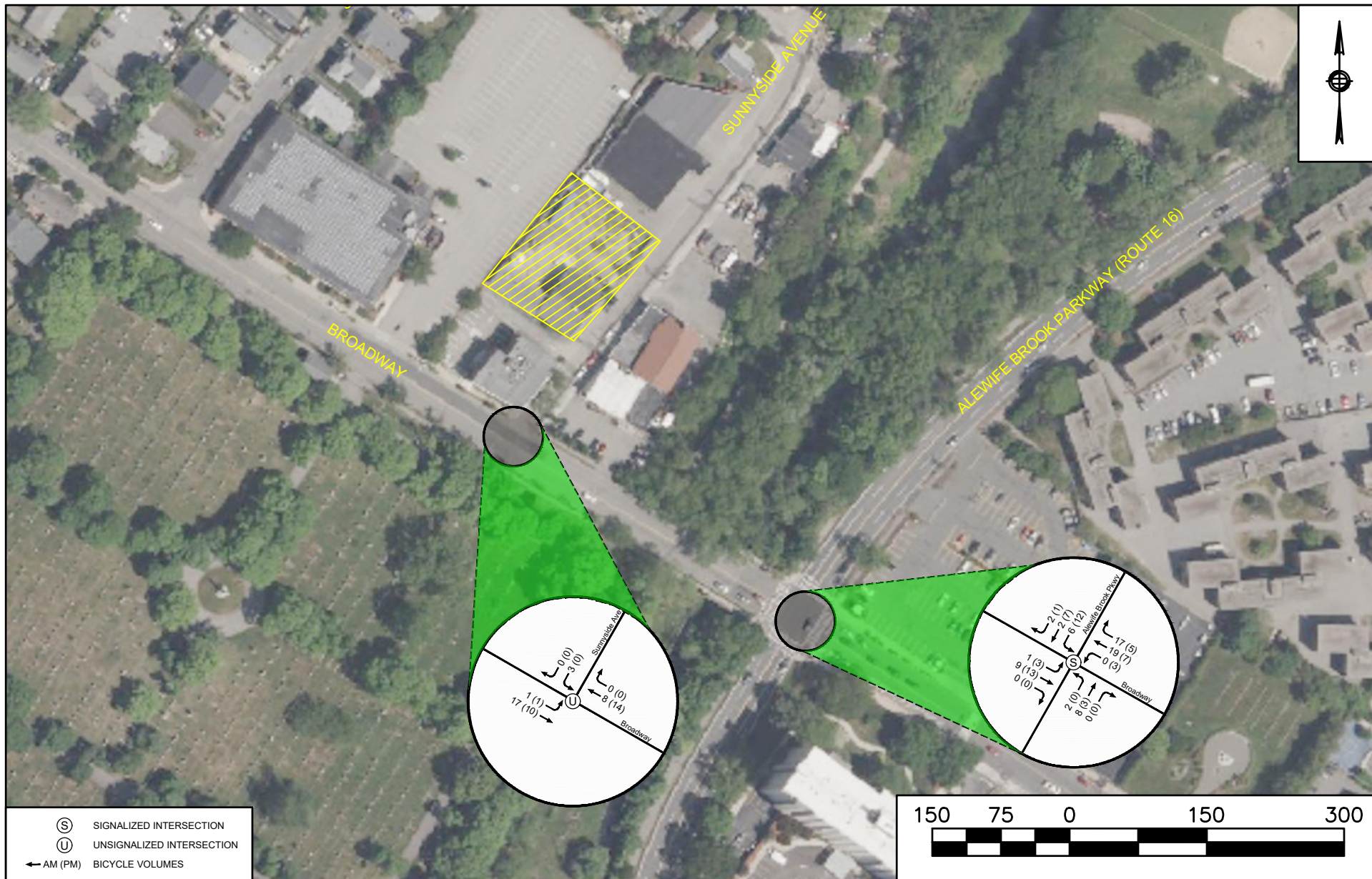


Figure 5: 2022 Existing Peak Hour Bicycle Volumes

10 Sunnyside Avenue
Arlington, MA

5 Safety Analysis

5.1 Crash Data

We obtained crash data for the study intersections from MassDOT's IMPACT Crash Data Portal for the five most recent complete years of data, 2015 through 2019. Table 2 summarizes the crash statistics for the two study-area intersections.

Table 2 – Crash Statistics

Location	Number of Crashes			Severity				Manner of Collision					Percent During	
	Year	Total Crashes	Annual Average	PD ^a	PI ^b	NR ^c	F ^d	A ^e	RE ^f	SS ^g	Other ^h	Incl. Ped-Bike ⁱ	Peak Hours ^k	Wet/Icy Conditions
Sunnyside Avenue at Broadway	2015	2	0.4	2	0	0	0	1	1	0	0	0	100%	50%
	2016	0		0	0	0	0	0	0	0	0	0	0%	0%
	2017	0		0	0	0	0	0	0	0	0	0	0%	0%
	2018	0		0	0	0	0	0	0	0	0	0	0%	0%
	2019	0		0	0	0	0	0	0	0	0	0	0%	0%
	TOTAL	2		2	0	0	0	1	1	0	0	0	100%	50%
Broadway at Alewife Brook Parkway	2015	6	11.2	4	2	0	0	3	1	0	2	0	17%	33%
	2016	16		10	5	1	0	12	1	1	2	0	13%	13%
	2017	13		9	4	0	0	6	2	4	1	1	46%	15%
	2018	11		8	3	0	0	7	2	2	0	1	10%	0%
	2019	10		3	6	0	1	7	0	1	2	1	20%	0%
	TOTAL	56		34	20	1	1	35	6	8	7	3	23%	11%

^aProperty Damage Only; ^bPersonal Injury Only (non-Fatal Injury); ^cNot Reported; ^dFatality; ^eAngle; ^fRear-end; ^gSideswipe (same direction); ^hSideswipe (opposite direction), Head-on, Single-Vehicle, Rear-to-Rear, Not Reported, Unknown, etc.; ⁱIncludes pedestrian or cyclist; ^kOccurred between 7-9am or 4-6pm

A total of 58 crashes were reported within the study area from 2015 to 2019. In terms of severity, 36 crashes reported property damage only, one crash had no severity reported, and another 20 crashes reported personal injury with one of them involving a fatality. Angle crashes were the most frequent type of crash with a total of 36 crashes, and of the remaining crashes, seven were rear-end, eight were sideswipes between vehicles traveling in the same direction, two were single-vehicle crashes, and five were head-on collisions. Three crashes involved pedestrians. 23% of all crashes in the study area occurred during peak hours, and 11% of all crashes occurred under wet conditions.

5.2 Intersection Crash Rates

The intersection crash rate is recognized as an effective tool to measure the safety of intersections. Crash rates for intersections are expressed by the number of crashes per million entering vehicles (MEV). Table 3 compares the crash rates for the study intersections with the Statewide and MassDOT District averages, as appropriate. The intersection crash rate calculations are included in Appendix D.

Table 3 – Crash Rate Summary

Location	Facility Type	Number of Crashes ^a	Crash Rate ^b	Average Rates ^{b,c}		Comparison to Average Rates	
				District 4	Statewide	District 4	Statewide
Sunnyside Avenue at Broadway	Unsignalized Intersection	2	0.10	0.57	0.57	Below	Below
Broadway at Alewife Brook Parkway	Signalized Intersection	56	1.09	0.73	0.78	Above	Above
^a Based on 5-year crash history from MassDOT, 2014-2018 ^b Crashes per million entering vehicles (MEV), ^c Based on the full set of MassDOT crash database entries as queried June 2018							

Based on Tables 2 and 3, the intersection of Alewife Brook Parkway and Broadway experienced a high frequency of crashes over the five-year review period with a total of 56 crashes reported at the intersection, averaging 11.2 crashes per year. The intersection was found to have a motor vehicle crash rate of 1.09 crashes per MEV, which is above both the Statewide average and the MassDOT District 4 average, where the Project is located. In addition, the Highway Safety Improvement Program (HSIP) database was reviewed. The intersection of Alewife Brook Parkway and Broadway is listed as a HSIP cluster in the most recent (2015-2017) HSIP cluster listing.

The crash rate at the intersection of Sunnyside Avenue at Broadway is well below both the MassDOT District 4 and Statewide averages.

6 Sight Distance

Stopping Sight Distance (SSD) is the length of the roadway ahead that is visible to the driver and should be long enough to enable a vehicle traveling at or near the design speed to stop before reaching a stationary object in its path. Stopping sight distance is the sum of the distance traversed by the vehicle from the instant the driver sights an object necessitating a stop to the instant the brakes are applied and the distance needed to stop the vehicle from the instant brake application begins.

Intersection Sight Distance (ISD) is the length of the leg of the departure sight triangle along the major road in both directions for a vehicle stopped on the minor road waiting to depart. The critical departure sight triangles for the proposed site driveway are for traffic approaching from either the left or right for left turns from driveway onto Sunnyside Avenue. The SSD and ISD values associated with a given design speed are shown in Table 4.

Table 4 – Sight Distance Criteria

DESIGN SPEED (MPH)	DESIGN STOPPING SIGHT DISTANCE VALUE ¹ (FT)	RECOMMENDED INTERSECTION SIGHT DISTANCE VALUE ² (FT)
15	80	170
20	115	225
25	155	280
30	200	335
35	250	390
40	305	445
45	360	500
50	425	555
55	495	610
60	570	665
65	645	720
70	730	775
75	820	830
80	910	885
<i>Source: A Policy on Geometric Design of Highways and Streets, AASHTO, Washington DC (2011)</i>		
¹ Design value based on a grade of less than 3%, a brake reaction distance predicted on a time of 2.5 seconds and a deceleration rate of 11.2 ft/s ²		
² Recommended value based on Case B1 - a stopped passenger car to turn left onto a two-lane highway with no median and grades 3% or less		

Using the statutory speed limit of 25 MPH for Sunnyside Avenue, we calculated the required sight distance at the Site Driveway. As shown in Table 5, both SSD and ISD values at the Site Driveway are sufficient to meet current traffic engineering standards.

Table 5 – Sight Distance Evaluation

Intersecting Street	Stopping Sight Distance (SSD)			Intersection Sight Distance (ISD)		
	Traveling	Calculated	Measured	Looking	Calculated	Measured
Site Driveway at Sunnyside Avenue	NB	155	180	Right	280	210 ^a
	SB	155	310	Left	280	280
^a Clear line of sight provided to Broadway						



7 Future No-Build Traffic Conditions

Nitsch Engineering used the 2022 existing traffic volumes as the baseline for projecting traffic volumes to future 2029 No-Build conditions. To determine future 2029 conditions, the following steps are included:

- Project existing 2022 traffic volumes seven years in the future to the horizon year (2029) using an annual background traffic growth factor to account for regional growth;
- Add traffic volumes associated with any planned developments that may impact the study area;
- Include any planned roadway improvements that may affect traffic volumes; and
- Analyze the study area location to determine future traffic operations.

7.1 Background Growth

We reviewed the Town of Arlington's 2015 Master Plan to determine an appropriate growth rate to apply to the 2022 existing traffic volumes. As noted in Table 2.1 in Chapter 2 of the Master Plan, the expected growth from 2020 to 2030 is 3.3%, which equates to an annual 0.33% background growth rate. Understanding that development is increasing in the Greater Boston Area, we selected a conservative rate of 2.0% per year to represent regional background growth of traffic, as well as accounting for any additional development in this area. We applied this growth rate over the 7-year design period for the turning movement data.

7.2 2029 No-Build Traffic Volumes

We developed the 2029 No-Build volumes by applying annual growth rates for seven years to the 2022 Existing conditions volumes turning movements at the three study intersections. Figure 6 presents the peak hour traffic volumes for 2029 No-Build conditions.

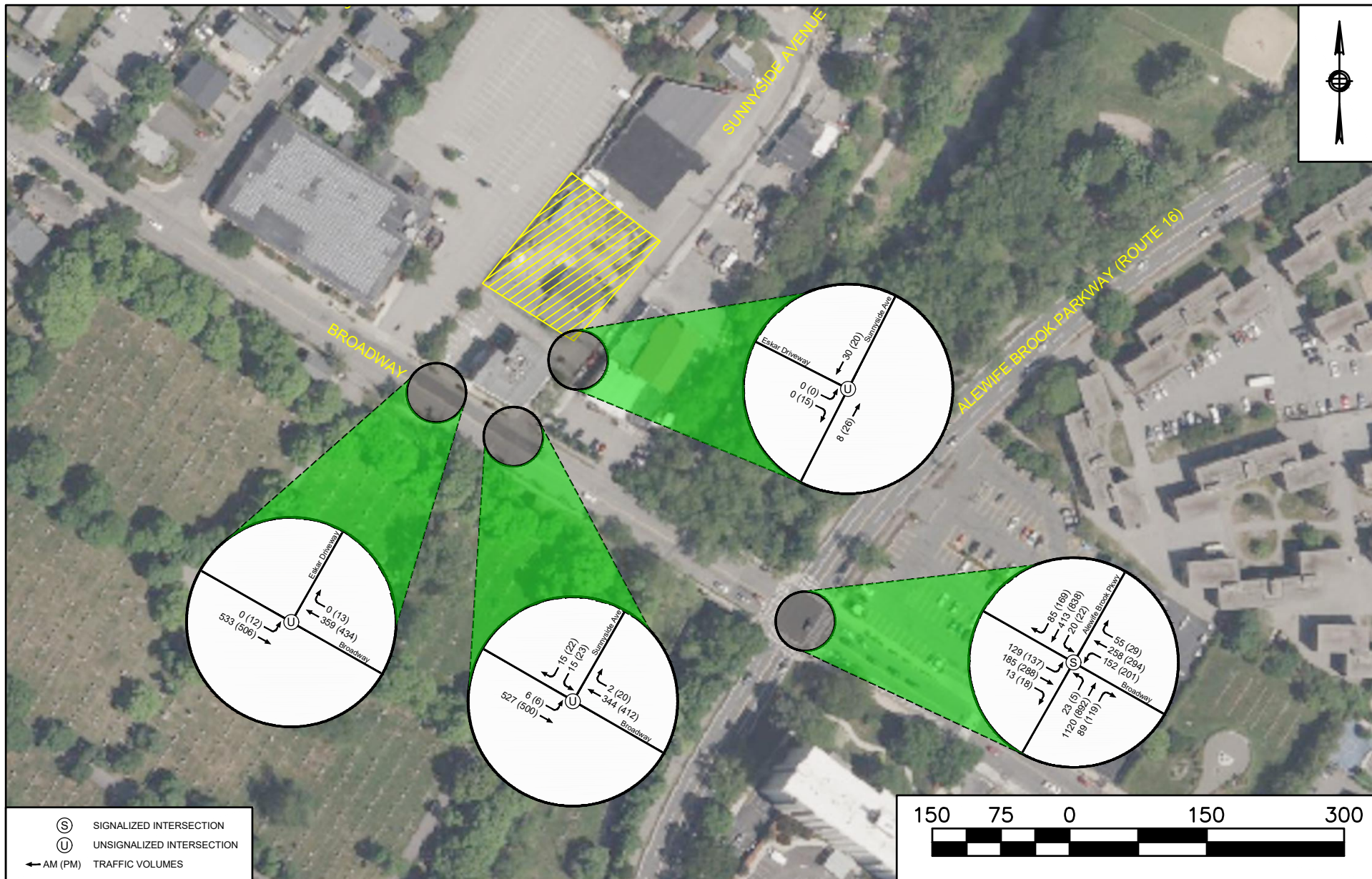


Figure 6: 2029 No-Build Peak Hour Traffic Volumes
 10 Sunnyside Avenue
 Arlington, MA

8 Future Build Conditions

8.1 Proposed Site Changes

The proponent proposes to modify and expand the existing site to develop 43 low-income residential units on site with approximately 22 parking spaces. The development will also include 70 secured bicycle spaces in the building in addition to the 10 visitor bicycle spaces outside. The development will also include 70 secured bicycle spaces in the building in addition to the 10 visitor bicycle spaces outside.

Access to the site will remain as existing; one curb cut off Sunnyside Avenue.

8.2 2029 Build Traffic Volumes

The 2029 Build traffic volumes comprise the 2029 No-Build volumes and the vehicle trips generated by the proposed development. The individual turning movements were applied to the study intersections.

8.2.1 Proposed Trip Generation

We estimated the trip generation for the proposed land use to obtain the trips generated by the proposed Project using the Institute of Transportation Engineers (ITE) *Trip Generation, 11th Edition*.¹ For the new affordable housing complex, we used LUC 223 – “Affordable Housing”, which includes all multifamily housing that is rented at below market rate to households that include at least one employed member. Eligibility to live in affordable housing can be a function of limited household income and resident age. As the existing land use did not generate any trips during the count periods, a trip generation credit was not applied. The total future trips are shown in Table 6.

Table 6 – Peak Hour Trip Generation

Period	Direction	Future Peak Hour Trips
		Apartment Trips
Weekday	Enter	103
	Exit	104
	Total	207
Weekday morning	Enter	4
	Exit	11
	Total	15
Weekday evening	Enter	12
	Exit	8
	Total	20

Detailed trip generation calculations are provided in Appendix C.

8.2.2 Project Trip Distribution and Assignment

The traffic volume to and from the proposed development site will be distributed and assigned for the weekday morning and weekday evening peak hours based on the existing travel patterns and logical travel routes, which

¹ *Trip Generation*, Institute of Transportation Engineers, 11th Edition, 2021, Washington, D.C.



are based on the existing roadway network both within the Town and the surrounding region. The Trip Distribution percentages specific to the development are shown in Figure 7.

To distribute the site generated traffic volume through the roadway network, the volumes in Table 6 were multiplied by the trip distribution percentages assigned to the intersection volumes. The site-generated traffic volumes are shown on Figure 8 for the weekday morning and weekday evening peak hours.

The Build Condition traffic volumes were calculated by combining the No-Build traffic volumes with the site-generated traffic volumes, which are shown on Figure 9.

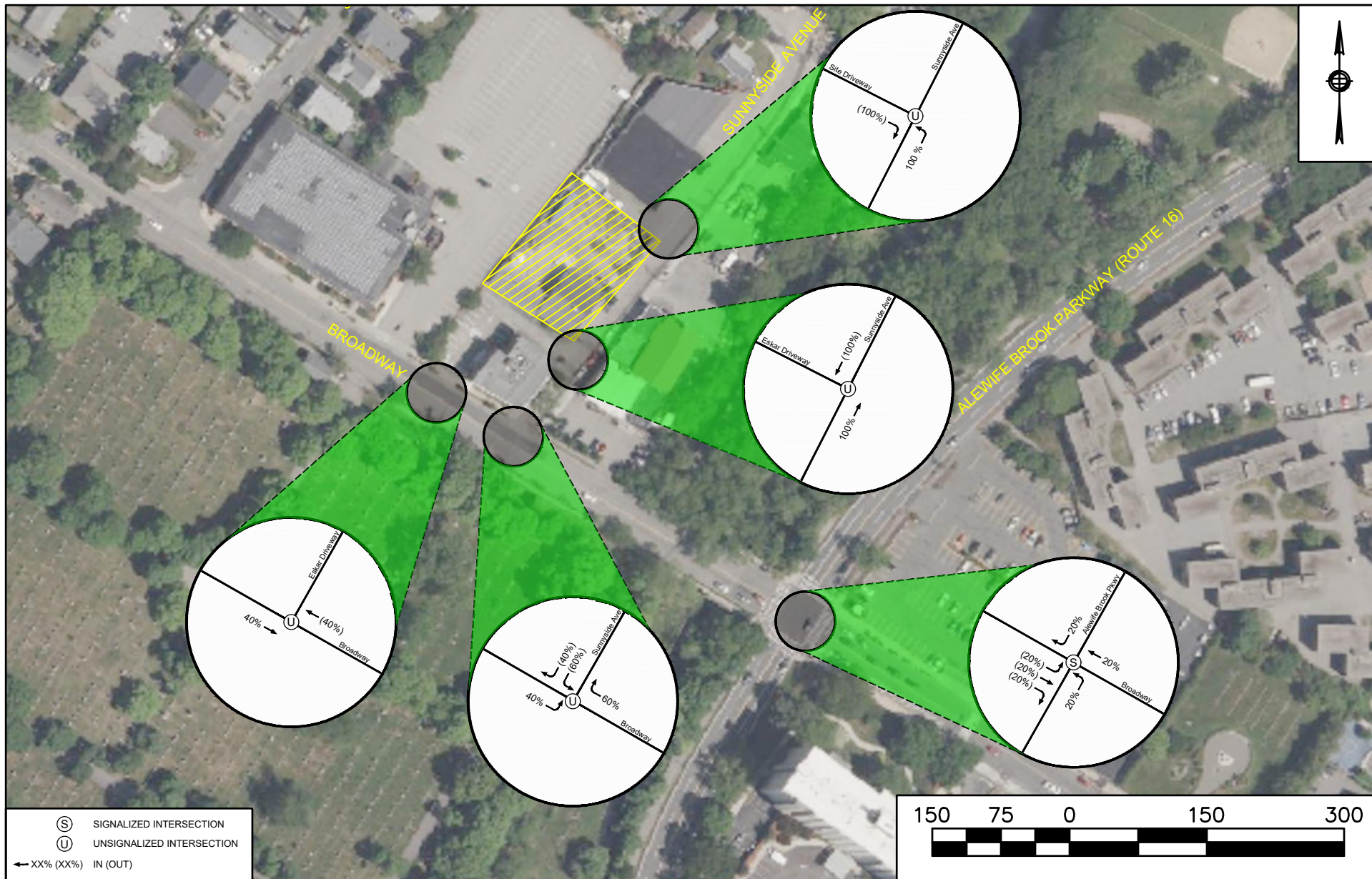


Figure 7: Site Generated Trip Distribution
 10 Sunnyside Avenue
 Arlington, MA

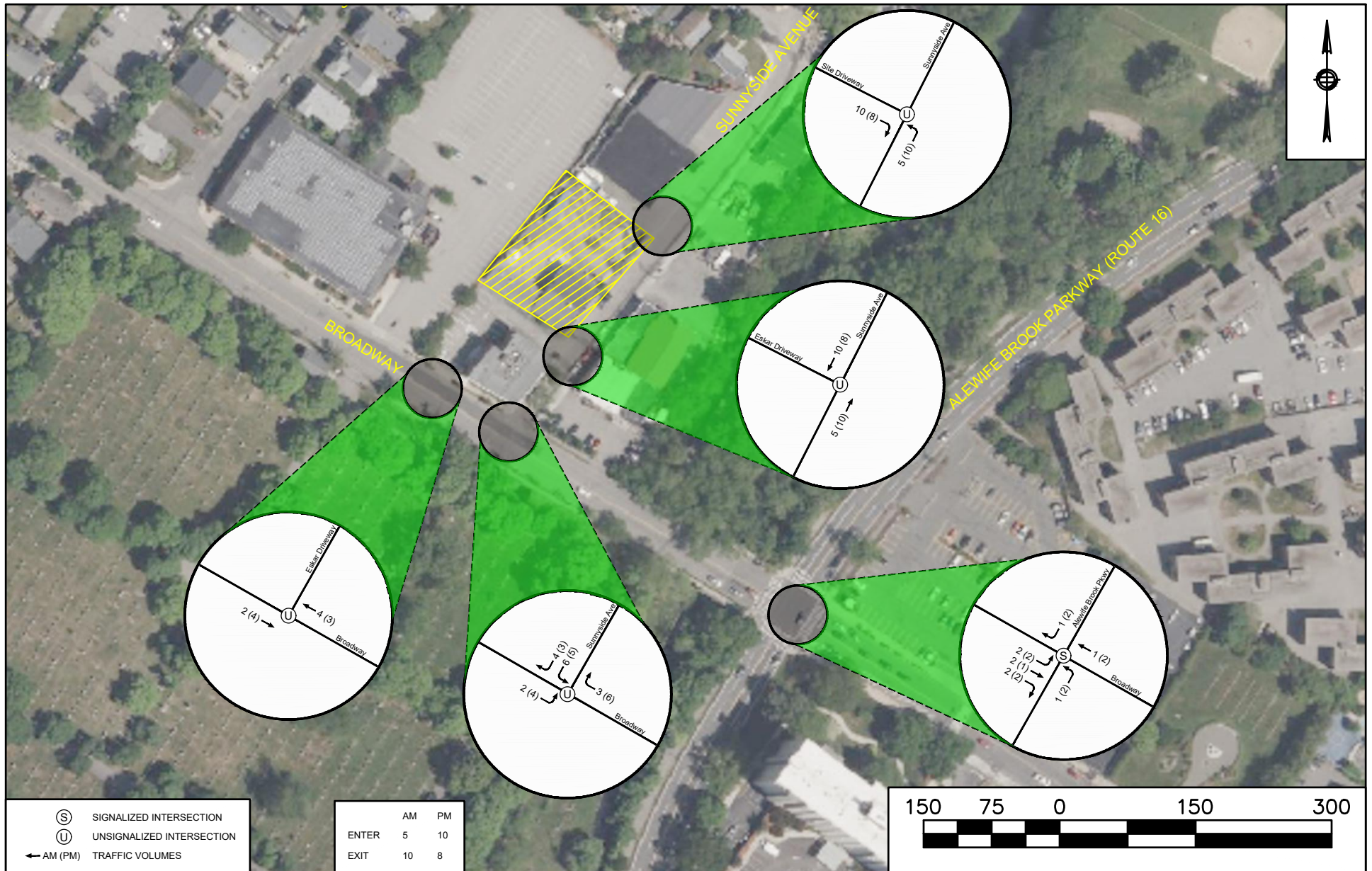


Figure 8: Site Generated Trip Assignment
 10 Sunnyside Avenue
 Arlington, MA

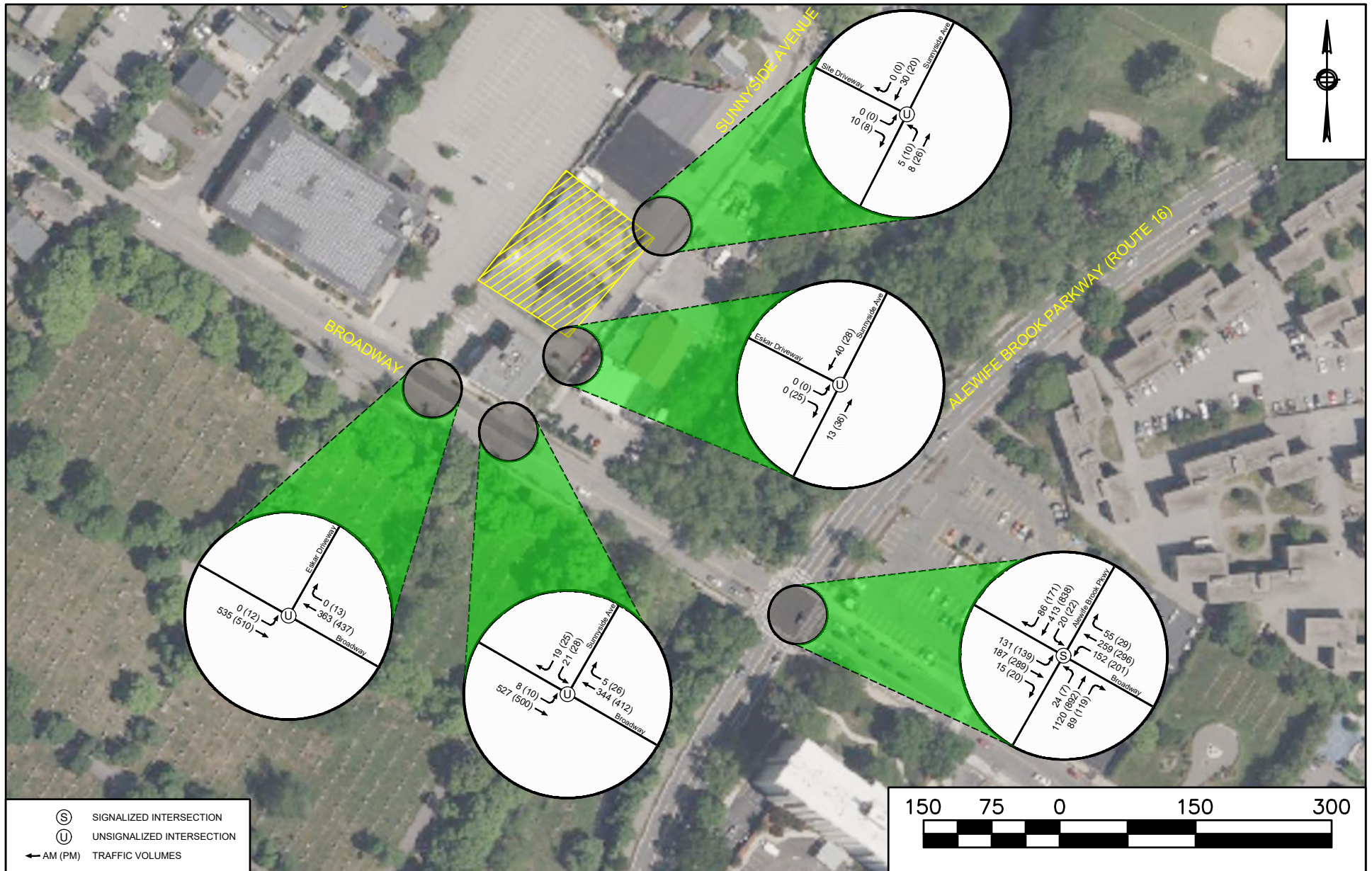


Figure 9: 2029 Build Peak Hour Traffic Volumes

10 Sunnyside Avenue
Arlington, MA

9 Parking Generation and Adequacy

Nitsch Engineering reviewed the Town of Arlington Zoning Bylaws to determine the required number of parking spaces for the development and assess adequacy of the proposed spaces.

The Town of Arlington Parking Bylaws requires a minimum of one space per five units of affordable housing. The calculated parking demand for 43 units of an affordable housing is 9 spaces.

Therefore, the proposed 22 parking spaces exceeds the minimum nine spaces required by the Town of Arlington Parking Bylaws.

10 Traffic Operations

10.1 Evaluation Criteria

Traffic operations at intersections are evaluated using the performance measures of average vehicular delay, level of service (LOS), volume-to-capacity (v/c) ratio, and average and 95th percentile queue lengths.


LOS is a qualitative measure that describes operating conditions through letter designations, from A to F. It is defined for intersections in terms of average control delay per vehicle. LOS A indicates the most favorable condition, with minimum traffic delay. LOS F represents the worst condition where there is significant traffic delay. LOS D or better is typically considered desirable for peak-hour operation in urban and suburban settings. The delay designations for each LOS level differ slightly between signalized and unsignalized intersections due to driver expectations and behavior. Table 7 summarizes the LOS criteria for intersections as used in this analysis.

Table 7 – Intersection Level of Service Criteria

Level of Service	Average Control Delay (sec/veh)	
	Signalized	Unsignalized
A	0-10	0-10
B	>10-20	>10-15
C	>20-35	>15-25
D	>35-55	>25-35
E	>55-80	>35-50
F	>80	>50
Source: HCM 2000		

For signalized intersections, LOS is reported by lane group, by approach, and for the entire intersection. For unsignalized intersections, the analysis assumes that the traffic on the mainline is not affected by traffic on the side street. As such, an unsignalized intersection's LOS is generally reported for left-turns on the mainline and all side street movements, and an overall intersection LOS is not determined.

The v/c ratio is a measure of congestion at an intersection approach. The capacity of a facility is the maximum hourly rate at which persons or vehicles reasonably can be expected to traverse a point or a uniform section of a lane or roadway under prevailing roadway, traffic, and control conditions. A v/c ratio below one indicates that the



intersection approach has adequate capacity to serve the arriving traffic demand. A v/c ratio that approaches or exceeds 1.0 indicates traffic congestion or poor operating conditions. In that situation, vehicles arrive faster than they can be served, so queue lengths can theoretically grow indefinitely, which is the unstable condition.

Since arrival volumes fluctuate throughout the peak hour, queue lengths vary. The average (50th percentile) queue length represents the maximum back of queue on a typical cycle for a signalized intersection. Average queue lengths are not reported for unsignalized intersections. The 95th percentile queue, reported for both signalized and unsignalized intersections, occurs with 95th percentile traffic volumes, and its length commonly denotes the farthest extent of the vehicle queue.

10.2 Capacity Analyses

We performed capacity analyses for the study intersections under 2022 Existing conditions, 2029 No-Build conditions, and 2029 Build conditions during the weekday morning and weekday evening peak hours using Trafficware's Synchro 11 software. Synchro uses, in part, the traffic operational analysis methodology of the Transportation Research Board's *Highway Capacity Manual* (HCM).² We generated the results of the capacity analyses using Synchro's Percentile Delay Method for delay, v/c ratio, and queue lengths, supported by HCM 2000 methodology for unsignalized intersection analysis due to geometric incompatibility with HCM 6 methodology. The Synchro output sheets for the capacity analyses are included in Appendix D.

10.2.1 2022 Existing Conditions Capacity Analysis

The first analysis evaluated traffic operations with 2022 existing traffic volumes under existing geometric conditions and signal timing/phasing. We derived peak hour factors (PHFs) and heavy vehicle percentages from the TMC data. We applied both PHFs and the heavy vehicle percentages by lane group. Table 8 summarizes the capacity analysis results for the 2022 Existing conditions.

² *Highway Capacity Manual 2000/2010/2016 (HCM 2000/HCM 2010/HCM 6)*, Transportation Research Board, Washington, D.C., 2000-2016.

Table 8 – Capacity Analysis Summary: 2022 Existing Conditions

Location	Direction / Movement ^a	Weekday Morning Peak Hour					Weekday Evening Peak Hour				
		v/c Ratio ^b	Delay ^c	LOS	Queue ^d		v/c Ratio ^b	Delay ^c	LOS	Queue ^d	
					50th	95th				50th	95th
Alewife Brook Pkwy (Rt 16) and Broadway [signalized]	Broadway EB – LTR	0.77	62.0	E	154	166	0.80	63.1	E	182	242
	Broadway WB – LTR	1.00	90.2	F	227	#284	1.16	139.2	F	~317	#318
	Route 16 NB – LTR	1.06	80.2	F	~601	#737	0.91	48.1	D	449	471
	Route 16 SB – LTR	0.63	35.0	D	191	233	1.02	72.7	E	~448	#613
	Overall	1.06	70.4	E	-	-	1.16	75.7	E	-	-
Sunnyside Ave and Broadway [unsignalized]	Broadway EB – LT	0.01	0.3	A	-	1	0.01	0.3	A	-	1
	Broadway WB – TR	0.20	0.0	A	-	0	0.26	0.0	A	-	0
	Sunnyside Ave SB – LR	0.10	14.2	B	-	8	0.22	18.7	C	-	20
^a Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound; Movement: L = Left-turn, T = Through movement, R = Right-turn ^b Overall v/c ratio is the maximum v/c ratio among lane groups ^c Average vehicle delay (seconds) ^d 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet ~ Volume exceeds capacity, queue is theoretically infinite; queue shown is maximum after two cycles # 95th percentile volume exceeds capacity, queue may be longer; queue shown is maximum after two cycles											

Under 2022 Existing conditions, the intersection of Alewife Brook Parkway and Broadway will operate at overall LOS E during both the weekday morning and weekday evening peak hours. Extensive queuing and high v/c ratios are calculated at most approaches to the Alewife Brook Parkway/Broadway intersection with some approaches exceeding 1.0 v/c ratio. At intersection of Sunnyside Avenue and Broadway, all approaches operate at LOS B or better during the weekday morning peak hours, and at LOS C or better during the evening peak hours.

10.2.2 2029 No-Build Conditions Capacity Analysis

Under future No-Build conditions, we kept lane geometry, traffic control, and signal timing parameters the same as existing. We applied the future volumes determined in Section 4.3 (Figure 3) with the same heavy vehicle percentages and PHFs as existing. Table 9 summarizes the analysis results for 2029 No-Build conditions.

Table 9 – Capacity Analysis Summary: 2029 No-Build Conditions

Location	Direction / Movement ^a	Weekday Morning Peak Hour					Weekday Evening Peak Hour				
		v/c Ratio ^b	Delay ^c	LOS	Queue ^d		v/c Ratio ^b	Delay ^c	LOS	Queue ^d	
					50th	95th				50th	95th
Alewife Brook Pkwy (Rt 16) and Broadway [signalized]	Broadway EB – LTR	0.81	64.2	E	182	191	0.85	66.4	E	214	280
	Broadway WB – LTR	1.16	139.6	F	~317	#355	1.35	213.2	F	~416	#390
	Route 16 NB – LTR	1.28	166.5	F	~820	#932	1.13	106.5	F	~665	#653
	Route 16 SB – LTR	0.84	47.7	D	254	296	1.38	212.2	F	~664	#812
	Overall	1.28	123.1	F	-	-	1.38	154.6	F	-	-
Sunnyside Ave and Broadway [unsignalized]	Broadway EB – LT	0.01	0.3	A	-	1	0.01	0.4	A	-	1
	Broadway WB – TR	0.23	0.0	A	-	0	0.29	0.0	A	-	0
	Sunnyside Ave SB – LR	0.14	16.2	C	-	12	0.27	22.6	C	-	27
^a Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound; Movement: L = Left-turn, T = Through movement, R = Right-turn ^b Overall v/c ratio is the maximum v/c ratio among lane groups ^c Average vehicle delay (seconds) ^d 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet ~ Volume exceeds capacity, queue is theoretically infinite; queue shown is maximum after two cycles # 95th percentile volume exceeds capacity, queue may be longer; queue shown is maximum after two cycles											

Under 2029 No-Build conditions, all movements will experience an increase in v/c ratio, delay, and queue length. At the intersection of Alewife Brook Parkway and Broadway, the overall intersection will degrade from LOS E to F during both the weekday morning and evening peak hours. At the intersection of Sunnyside Avenue and Broadway, the Sunnyside Avenue southbound approach will degrade from LOS B to C during the weekday morning peak hour. All remaining approaches at the intersection will continue to operate at the same level of service as the Existing conditions during both the weekday morning and evening peak hours.

10.2.3 2029 Build Conditions Capacity Analysis

We performed capacity analyses for the proposed build conditions for the future development. Under these future Build conditions, we kept lane geometry, traffic control, and signal timing parameters the same as existing for all study intersections. We applied the future volumes determined in Section 8.2 (Figure 9) with the same heavy vehicle percentages and PHFs as existing. Table 10 summarizes the analysis results for the 2029 Build conditions.

Table 10 – Capacity Analysis Summary: 2029 Build Conditions

Location	Direction / Movement ^a	Weekday Morning Peak Hour					Weekday Evening Peak Hour				
		v/c Ratio ^b	Delay ^c	LOS	Queue ^d		v/c Ratio ^b	Delay ^c	LOS	Queue ^d	
					50th	95th				50th	95th
Alewife Brook Pkwy (Rt 16) and Broadway [signalized]	Broadway EB – LTR	0.82	64.7	E	186	195	0.86	66.9	E	217	283
	Broadway WB – LTR	1.17	141.4	F	~320	#355	1.36	216.4	F	~421	#393
	Route 16 NB – LTR	1.30	174.6	F	~832	#940	1.19	131.5	F	~698	#681
	Route 16 SB – LTR	0.85	48.3	D	257	297	1.39	217.8	F	~672	#816
	Overall	1.30	127.3	F	-	-	1.39	165.8	F	-	-
Sunnyside Ave and Broadway [unsignalized]	Broadway EB – LT	0.02	0.3	A	-	1	0.01	0.3	A	-	1
	Broadway WB – TR	0.23	0.0	A	-	0	0.30	0.0	A	-	0
	Sunnyside Ave SB – LR	0.19	17.5	C	-	17	0.33	24.3	C	-	34
Sunnyside Ave and Site Driveway [unsignalized]	Site Driveway EB – LR	0.01	8.5	A	-	1	0.01	8.4	A	-	1
	Sunnyside Ave NB – LT	0.00	2.6	A	-	0	0.01	2.1	A	-	1
	Sunnyside Ave SB – TR	0.02	0.0	A	-	0	0.01	0.0	A	-	0
^a Direction: NB = Northbound, SB = Southbound, EB = Eastbound, WB = Westbound; Movement: L = Left-turn, T = Through movement, R = Right-turn ^b Overall v/c ratio is the maximum v/c ratio among lane groups ^c Average vehicle delay (seconds) ^d 50th and 95th percentile queue lengths (feet) based upon average vehicle length of 25 feet ~ Volume exceeds capacity, queue is theoretically infinite; queue shown is maximum after two cycles # 95th percentile volume exceeds capacity, queue may be longer; queue shown is maximum after two cycles											

Under 2029 Build conditions, all movements will continue to operate at No-Build conditions levels for the two existing intersections. All movements at the intersection of Sunnyside Avenue and the Site Driveway will operate at LOS A.



11 Conclusions and Recommendations

Nitsch Engineering has prepared this Traffic Impact Study (TIS) for the proposed 40B housing development at 10 Sunnyside Avenue in Arlington, Massachusetts.

We studied three intersections, one signalized and two unsignalized, to establish the impact the development would have on intersection traffic operations.

The crash data over the last five years available from MassDOT indicate that intersection of Alewife Brook Parkway and Broadway was found to have a motor vehicle crash rate above the MassDOT average for the District in which the Project is located (District 4). The Highway Safety Improvement Program (HSIP) database was reviewed. The intersection of Alewife Brook Parkway and Broadway is listed as one of the top 200 Crash Clusters in the most recent (2017-2019) HSIP cluster listing. The Broadway at Sunnyside Avenue intersection is not listed as a HSIP location and has a crash rate below the MassDOT average.

We collected turning movement counts at the three study intersections. For future conditions, we projected the Existing conditions traffic volumes over a seven-year period to the horizon year 2029 using an annual growth rate of 2.0% based on expected regional growth to become our future No-Build conditions volumes. We estimated the quantity of vehicle trips the proposed development would generate based on Institute of Transportation Engineers (ITE) *Trip Generation*, 10th Edition criteria.

We performed a vehicle capacity analysis to compare the weekday morning and weekday evening peak hours of the 2022 Existing conditions, 2029 No-Build conditions, and 2029 Build conditions for each of the three study intersections. Under all conditions, the intersection of Alewife Brook Parkway and Broadway will operate poorly with most of the movements operating at LOS F. However, all movements for both intersections in Build condition will continue to operate at No-Build conditions with only minor increases in delay and queuing. The intersection of Sunnyside Avenue and the Site Driveway will operate at LOS A for all movements.

As the project is not anticipated to have a significant impact to traffic operations at the study intersections, no mitigation is recommended at this time.



APPENDIX CONTENTS

<u>Appendix</u>	<u>Description</u>
A	Traffic Count Data
B	MassDOT's 2019 Weekday Seasonal Adjustment Factors
C	Crash Rate Worksheets
D	Capacity Analysis



Appendix A: Traffic Count Data

LENGTH DATA ANALYSIS

Location



Broadway
East of Sunnyside Avenue
Latitude: 0.000000
Longitude: 0.000000

Analysis Time Period



Start	End
11/2/2022	11/3/2022
12:00 AM	11:59 PM

Vehicles Analyzed



17,544

Motorcycles



Motorcycles
Volume: 416
Pct of Total: 2.4%
Average Speed: 15 MPH

Passenger Cars



Passenger Cars
Volume: 10,340
Pct of Total: 58.9%
Average Speed: 20 MPH

Light Trucks and Vans



Light Trucks and Vans
Volume: 4,349
Pct of Total: 24.8%
Average Speed: 20 MPH

Single Unit Trucks



Single Unit Trucks
Volume: 1,910
Pct of Total: 10.9%
Average Speed: 17 MPH

Buses



Buses
Volume: 283
Pct of Total: 1.6%
Average Speed: 18 MPH

Multi Unit Trucks



Multi Unit Trucks
Volume: 246
Pct of Total: 1.4%
Average Speed: 15 MPH

Accurate Counts
978-664-2565

Location : Broadway
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: WB,

15289001

11/2/2022	0 - 3	> 3 - 6	> 6 - 9	> 9 - 12	> 12 - 15	> 15 - 18	> 18 - 21	> 21 - 24	> 24 - 27	> 27 - 30	> 30 - 33	> 33 - 36	> 36 - 39	> 39	Total
Time	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	
12:00 AM	0	0	0	2	0	5	2	3	6	1	0	1	0	0	20
1:00	0	0	0	0	1	0	1	6	3	0	0	0	0	0	11
2:00	0	0	0	0	0	0	2	2	2	0	0	0	0	0	6
3:00	0	0	0	0	0	0	0	5	2	2	0	0	0	0	9
4:00	0	0	1	0	1	0	0	2	4	3	0	0	0	0	11
5:00	0	0	0	0	0	1	3	14	18	2	1	0	0	0	39
6:00	0	0	0	1	0	5	23	27	24	16	2	0	1	0	99
7:00	0	0	0	0	6	12	29	73	94	51	11	6	1	0	283
8:00	0	0	3	0	4	15	41	91	77	38	18	4	0	0	291
9:00	0	0	0	1	13	10	36	68	41	27	7	0	0	0	203
10:00	0	0	4	2	18	25	42	51	41	4	3	0	0	0	190
11:00	0	0	3	5	12	16	65	54	38	4	1	0	0	0	198
12:00 PM	0	0	3	5	19	47	60	77	41	9	0	1	0	0	262
1:00	0	0	0	1	2	3	29	60	63	34	8	3	0	0	203
2:00	0	0	1	0	0	10	22	91	86	36	24	3	1	0	274
3:00	0	0	2	2	1	8	24	67	102	61	12	1	0	0	280
4:00	0	0	0	1	2	10	48	56	81	61	9	1	3	0	272
5:00	0	0	1	4	7	4	51	102	133	37	31	0	1	0	371
6:00	0	0	3	1	17	10	65	105	78	27	3	1	0	1	311
7:00	0	0	0	1	2	1	23	74	72	15	3	1	0	0	192
8:00	0	0	1	0	2	1	11	45	47	20	7	0	0	0	134
9:00	0	0	0	0	2	2	15	32	27	9	9	1	0	0	97
10:00	0	0	0	1	0	2	10	25	22	3	2	1	0	0	66
11:00	0	0	0	1	3	3	7	3	10	5	3	2	0	0	37
Total	0	0	22	28	112	190	609	1133	1112	465	154	26	7	1	3859

Percentile	15th
Speed	19
	24
Mean Speed (Average)	23.4
10 MPH Pace Speed	18-27
Number in Pace	3000
Percent in Pace	77.7%
Number > 24 MPH	1765
Percent > 24 MPH	45.7%

Accurate Counts
978-664-2565

Location : Broadway
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: WB,

15289001

11/3/2022	0 - 3	> 3 - 6	> 6 - 9	> 9 - 12	> 12 - 15	> 15 - 18	> 18 - 21	> 21 - 24	> 24 - 27	> 27 - 30	> 30 - 33	> 33 - 36	> 36 - 39	> 39	Total
Time	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	
12:00 AM	0	0	0	0	0	0	0	5	6	2	2	0	0	0	15
1:00	0	0	0	0	0	0	0	1	2	2	1	0	0	0	6
2:00	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
3:00	0	0	0	0	1	0	0	3	4	0	0	0	1	0	9
4:00	0	0	0	0	1	1	0	5	5	0	1	0	0	0	13
5:00	0	0	1	1	0	1	4	10	10	6	1	0	0	0	34
6:00	0	0	1	3	1	0	9	28	28	17	4	0	0	0	91
7:00	0	0	0	0	2	6	23	51	106	54	16	1	0	0	259
8:00	0	0	3	0	15	8	39	67	112	34	11	2	0	1	292
9:00	0	0	0	1	1	9	27	52	59	38	10	0	0	0	197
10:00	0	0	1	1	4	4	37	56	48	26	2	1	0	1	181
11:00	0	0	3	1	0	11	15	61	87	27	9	0	3	0	217
12:00 PM	0	0	0	1	1	4	16	66	75	24	12	1	0	0	200
1:00	0	0	1	1	2	3	37	63	75	38	16	2	0	0	238
2:00	0	0	0	0	4	2	24	56	96	60	7	5	1	1	256
3:00	0	0	1	4	4	5	32	76	142	41	5	0	1	0	311
4:00	0	0	0	0	1	2	33	73	93	75	14	2	0	0	293
5:00	0	0	1	1	6	10	50	123	105	53	18	0	0	1	368
6:00	0	0	1	4	20	21	86	102	65	32	6	0	0	0	337
7:00	0	0	4	3	0	8	25	67	69	19	3	1	0	1	200
8:00	0	0	0	1	3	6	13	36	50	29	6	2	0	0	146
9:00	0	0	0	1	2	3	19	25	31	11	7	0	0	0	99
10:00	0	0	0	0	1	1	7	28	24	8	6	2	2	0	79
11:00	0	0	0	0	0	0	2	5	2	1	1	1	0	0	12
Total	0	0	17	23	69	105	499	1060	1294	597	158	20	8	5	3855
Percentile															
Speed				15th	50th	85th	95th								
Mean Speed (Average)				20	24	28	30								
10 MPH Pace Speed				20-29											
Number in Pace				3114											
Percent in Pace				80.8%											
Number > 24 MPH				2082											
Percent > 24 MPH				54.0%											
Grand Total	0	0	39	51	181	295	1108	2193	2406	1062	312	46	15	6	7714
Stats															
Percentile				15th	50th	85th	95th								
Speed				11	20	26	29								
Mean Speed (Average)				19.7											
10 MPH Pace Speed				19-28											
Number in Pace				6047											
Percent in Pace				78.4%											
Number > 24 MPH				4848											
Percent > 24 MPH				27.8%											

Accurate Counts
978-664-2565

Location : Broadway
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: EB,

15289001

11/2/2022	0 - 3	> 3 - 6	> 6 - 9	> 9 - 12	> 12 - 15	> 15 - 18	> 18 - 21	> 21 - 24	> 24 - 27	> 27 - 30	> 30 - 33	> 33 - 36	> 36 - 39	> 39	Total
Time	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	
12:00 AM	0	0	0	2	7	0	2	5	2	1	1	0	1	1	22
1:00	0	0	0	0	0	0	1	0	3	1	0	0	0	0	5
2:00	0	0	0	0	0	2	3	0	2	2	0	0	0	0	9
3:00	0	0	0	0	2	0	1	1	3	1	1	0	0	0	9
4:00	0	0	0	1	0	0	3	2	6	3	2	0	0	1	18
5:00	0	0	1	1	3	6	9	10	7	2	4	1	1	1	46
6:00	0	0	26	20	23	20	38	32	23	10	4	1	0	2	199
7:00	0	0	67	65	77	45	43	18	19	4	5	0	0	2	345
8:00	0	0	89	87	90	33	20	3	3	1	1	0	0	1	328
9:00	0	0	54	54	81	48	52	32	19	6	1	2	0	2	351
10:00	0	0	21	23	59	38	33	35	16	9	3	1	0	0	238
11:00	0	0	38	45	71	55	55	25	9	5	0	0	0	0	303
12:00 PM	0	0	40	39	57	38	46	25	12	2	2	1	0	0	262
1:00	0	0	46	36	48	35	45	31	17	12	1	1	0	1	273
2:00	0	0	42	41	64	43	43	36	15	8	6	0	0	3	301
3:00	0	0	57	44	60	73	54	31	21	10	2	0	0	1	353
4:00	0	0	78	67	80	63	54	33	28	6	3	1	0	1	414
5:00	0	0	76	58	83	48	78	32	12	7	4	1	0	2	401
6:00	0	0	76	74	99	78	46	18	6	0	0	0	0	0	397
7:00	0	0	35	29	56	44	48	27	20	7	3	1	0	1	271
8:00	0	0	17	12	23	30	38	25	17	10	1	0	0	2	175
9:00	0	0	2	13	24	17	32	11	11	10	3	1	1	0	125
10:00	0	0	1	6	8	10	14	11	7	5	0	0	0	0	62
11:00	0	0	0	3	4	6	8	10	7	2	1	0	0	0	41
Total	0	0	766	720	1019	732	766	453	285	124	48	11	3	21	4948

Percentile	15th
Speed	9
Mean Speed (Average)	16.3
10 MPH Pace Speed	11-20
Number in Pace	2755
Percent in Pace	55.7%
Number > 24 MPH	492
Percent > 24 MPH	9.9%

Accurate Counts
978-664-2565

Location : Broadway
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: EB,

15289001

11/3/2022	0 - 3	> 3 - 6	> 6 - 9	> 9 - 12	> 12 - 15	> 15 - 18	> 18 - 21	> 21 - 24	> 24 - 27	> 27 - 30	> 30 - 33	> 33 - 36	> 36 - 39	> 39	Total	
Time	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	Total	
12:00 AM	0	0	0	1	2	0	4	6	4	2	0	1	1	0	21	
1:00	0	0	0	1	0	0	1	0	2	1	0	0	0	0	5	
2:00	0	0	0	0	0	1	0	2	0	1	0	0	0	0	4	
3:00	0	0	0	0	0	1	2	1	2	2	0	0	0	0	8	
4:00	0	0	0	0	0	1	2	5	3	2	1	0	0	1	15	
5:00	0	0	0	1	7	5	6	11	9	5	1	3	1	0	49	
6:00	0	0	17	19	25	21	39	19	12	6	7	3	2	2	172	
7:00	0	0	60	49	67	65	55	32	24	8	2	1	0	2	365	
8:00	0	0	88	75	88	43	39	9	7	0	0	0	0	5	354	
9:00	0	0	77	51	68	49	40	23	12	4	2	0	0	2	328	
10:00	0	0	26	26	41	44	43	27	19	6	5	2	0	1	240	
11:00	0	0	35	18	40	45	47	29	29	10	2	1	1	1	258	
12:00 PM	0	0	32	38	50	34	38	27	25	7	9	2	1	0	263	
1:00	0	0	43	37	51	36	53	25	18	12	7	2	0	3	287	
2:00	0	0	40	28	45	49	53	31	20	10	0	4	0	1	281	
3:00	0	0	47	42	86	68	52	29	21	10	5	0	0	0	360	
4:00	0	0	65	49	81	71	74	23	15	6	0	0	0	0	384	
5:00	0	0	89	80	86	53	45	18	16	4	1	0	0	2	394	
6:00	0	0	74	67	82	54	53	22	5	2	2	0	0	0	361	
7:00	0	0	33	25	61	33	49	29	18	3	2	0	1	0	254	
8:00	0	0	11	22	39	30	28	23	14	4	0	1	0	0	172	
9:00	0	0	3	15	27	15	32	18	9	5	1	1	0	1	127	
10:00	0	0	2	3	24	12	17	13	6	7	1	1	0	1	87	
11:00	0	0	0	1	5	2	4	2	0	2	0	0	1	0	17	
Total	0	0	742	648	975	732	776	424	290	119	48	22	8	22	4806	
Percentile				15th	50th	85th	95th									
Speed				9	15	22	26									
Mean Speed (Average)				16.5												
10 MPH Pace Speed				11-20												
Number in Pace				2695												
Percent in Pace				56.1%												
Number > 24 MPH				509												
Percent > 24 MPH				10.6%												
Grand Total	0	0	1508	1368	1994	1464	1542	877	575	243	96	33	11	43	9754	
Stats				Percentile	15th	50th	85th	95th								
Speed				9	15	22	26									
Mean Speed (Average)				16.4												
10 MPH Pace Speed				11-20												
Number in Pace				5450												
Percent in Pace				55.9%												
Number > 24 MPH				1001												
Percent > 24 MPH				10.3%												

Accurate Counts
978-664-2565

Location : Broadway
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: Combined

15289001

11/2/2022	0 - 3	> 3 - 6	> 6 - 9	> 9 - 12	> 12 - 15	> 15 - 18	> 18 - 21	> 21 - 24	> 24 - 27	> 27 - 30	> 30 - 33	> 33 - 36	> 36 - 39	> 39	Total
Time	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	
12:00 AM	0	0	0	4	7	5	4	8	8	2	1	1	1	1	42
1:00	0	0	0	0	1	0	2	6	6	1	0	0	0	0	16
2:00	0	0	0	0	0	2	5	2	4	2	0	0	0	0	15
3:00	0	0	0	0	2	0	1	6	5	3	1	0	0	0	18
4:00	0	0	1	1	1	0	3	4	10	6	2	0	0	1	29
5:00	0	0	1	1	3	7	12	24	25	4	5	1	1	1	85
6:00	0	0	26	21	23	25	61	59	47	26	6	1	1	2	298
7:00	0	0	67	65	83	57	72	91	113	55	16	6	1	2	628
8:00	0	0	92	87	94	48	61	94	80	39	19	4	0	1	619
9:00	0	0	54	55	94	58	88	100	60	33	8	2	0	2	554
10:00	0	0	25	25	77	63	75	86	57	13	6	1	0	0	428
11:00	0	0	41	50	83	71	120	79	47	9	1	0	0	0	501
12:00 PM	0	0	43	44	76	85	106	102	53	11	2	2	0	0	524
1:00	0	0	46	37	50	38	74	91	80	46	9	4	0	1	476
2:00	0	0	43	41	64	53	65	127	101	44	30	3	1	3	575
3:00	0	0	59	46	61	81	78	98	123	71	14	1	0	1	633
4:00	0	0	78	68	82	73	102	89	109	67	12	2	3	1	686
5:00	0	0	77	62	90	52	129	134	145	44	35	1	1	2	772
6:00	0	0	79	75	116	88	111	123	84	27	3	1	0	1	708
7:00	0	0	35	30	58	45	71	101	92	22	6	2	0	1	463
8:00	0	0	18	12	25	31	49	70	64	30	8	0	0	2	309
9:00	0	0	2	13	26	19	47	43	38	19	12	2	1	0	222
10:00	0	0	1	7	8	12	24	36	29	8	2	1	0	0	128
11:00	0	0	0	4	7	9	15	13	17	7	4	2	0	0	78
Total	0	0	788	748	1131	922	1375	1586	1397	589	202	37	10	22	8807

Percentile	15th
Speed	11
Mean Speed (Average)	19.4
10 MPH Pace Speed	17-26
Number in Pace	4650
Percent in Pace	52.8%
Number > 24 MPH	2257
Percent > 24 MPH	25.6%

Accurate Counts
978-664-2565

Location : Broadway
Location : East of Sunnyside Avenue
City/State: Arlington, MA
Direction: Combined

15289001

11/3/2022	0 - 3	> 3 - 6	> 6 - 9	> 9 - 12	> 12 - 15	> 15 - 18	> 18 - 21	> 21 - 24	> 24 - 27	> 27 - 30	> 30 - 33	> 33 - 36	> 36 - 39	> 39	Total
Time	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	MPH	
12:00 AM	0	0	0	1	2	0	4	11	10	4	2	1	1	0	36
1:00	0	0	0	1	0	0	1	1	4	3	1	0	0	0	11
2:00	0	0	0	0	0	1	1	3	0	1	0	0	0	0	6
3:00	0	0	0	0	1	1	2	4	6	2	0	0	1	0	17
4:00	0	0	0	0	1	2	2	10	8	2	2	0	0	1	28
5:00	0	0	1	2	7	6	10	21	19	11	2	3	1	0	83
6:00	0	0	18	22	26	21	48	47	40	23	11	3	2	2	263
7:00	0	0	60	49	69	71	78	83	130	62	18	2	0	2	624
8:00	0	0	91	75	103	51	78	76	119	34	11	2	0	6	646
9:00	0	0	77	52	69	58	67	75	71	42	12	0	0	2	525
10:00	0	0	27	27	45	48	80	83	67	32	7	3	0	2	421
11:00	0	0	38	19	40	56	62	90	116	37	11	1	4	1	475
12:00 PM	0	0	32	39	51	38	54	93	100	31	21	3	1	0	463
1:00	0	0	44	38	53	39	90	88	93	50	23	4	0	3	525
2:00	0	0	40	28	49	51	77	87	116	70	7	9	1	2	537
3:00	0	0	48	46	90	73	84	105	163	51	10	0	1	0	671
4:00	0	0	65	49	82	73	107	96	108	81	14	2	0	0	677
5:00	0	0	90	81	92	63	95	141	121	57	19	0	0	3	762
6:00	0	0	75	71	102	75	139	124	70	34	8	0	0	0	698
7:00	0	0	37	28	61	41	74	96	87	22	5	1	1	1	454
8:00	0	0	11	23	42	36	41	59	64	33	6	3	0	0	318
9:00	0	0	3	16	29	18	51	43	40	16	8	1	0	1	226
10:00	0	0	2	3	25	13	24	41	30	15	7	3	2	1	166
11:00	0	0	0	1	5	2	6	7	2	3	1	1	1	0	29
Total	0	0	759	671	1044	837	1275	1484	1584	716	206	42	16	27	8661
Percentile															
Speed															
Mean Speed (Average)															19.9
10 MPH Pace Speed															17-26
Number in Pace															4597
Percent in Pace															53.1%
Number > 24 MPH															2591
Percent > 24 MPH															29.9%
Grand Total	0	0	1547	1419	2175	1759	2650	3070	2981	1305	408	79	26	49	17468
Stats															
Percentile															15th
Speed															11
Mean Speed (Average)															19.7
10 MPH Pace Speed															17-26
Number in Pace															9247
Percent in Pace															52.9%
Number > 24 MPH															4848
Percent > 24 MPH															27.8%

Accurate Counts
978-664-2565

Location : Broadway
Location : East of Sunnyside Avenue
City/State: Arlington, MA

15289001

11/2/2022	WB,		Hour Totals		EB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		7		71		3		64		
12:15		5		65		5		64		
12:30		5		66		8		70		
12:45		3		60	20	6		64	22	262
1:00		5		44		3		68		
1:15		4		56		0		78		
1:30		1		40		2		69		
1:45		1		63	11	0		58	5	273
2:00		0		70		5		69		
2:15		3		53		1		64		
2:30		1		71		0		79		
2:45		2		80	6	3		89	9	301
3:00		3		71		1		85		
3:15		3		60		2		97		
3:30		2		79		5		95		
3:45		1		70	9	1		76	9	353
4:00		2		63		0		104		
4:15		3		71		6		106		
4:30		3		73		9		104		
4:45		3		65	11	3		100	18	414
5:00		1		99		5		98		
5:15		6		102		10		105		
5:30		19		91		13		112		
5:45		13		79	39	18		86	46	401
6:00		13		83		37		111		
6:15		13		73		39		102		
6:30		36		81		53		104		
6:45		37		74	99	70		80	199	397
7:00		36		55		77		78		
7:15		56		56		83		78		
7:30		87		47		121		70		
7:45		104		34	283	64		45	345	271
8:00		76		38		84		47		
8:15		64		33		72		35		
8:30		93		33		96		44		
8:45		58		30	291	76		49	328	175
9:00		56		32		90		34		
9:15		55		29		95		32		
9:30		45		23		99		37		
9:45		47		13	203	67		22	351	125
10:00		32		21		59		22		
10:15		56		16		49		16		
10:30		42		16		69		13		
10:45		60		13	190	61		11	238	62
11:00		52		13		78		12		
11:15		50		11		71		15		
11:30		53		2		66		5		
11:45		43		11	198	88		9	303	41
Total		1360		2499		1873		3075		3233
Percent		35.2%		64.8%		37.9%		62.1%		36.7%

Accurate Counts
978-664-2565

Location : Broadway
Location : East of Sunnyside Avenue
City/State: Arlington, MA

15289001

11/3/2022		WB,		Hour Totals		EB,		Hour Totals		Combined Totals	
Time	Morning	Afternoon		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		6	56			5	44				
12:15		5	61			4	70				
12:30		1	35			7	86				
12:45		3	48	15	200	5	63	21	263	36	463
1:00		0	52			2	74				
1:15		3	61			2	76				
1:30		2	64			1	73				
1:45		1	61	6	238	0	64	5	287	11	525
2:00		0	54			1	56				
2:15		1	69			2	70				
2:30		0	70			1	83				
2:45		1	63	2	256	0	72	4	281	6	537
3:00		3	62			1	75				
3:15		3	87			2	100				
3:30		1	73			1	85				
3:45		2	89	9	311	4	100	8	360	17	671
4:00		1	69			2	97				
4:15		2	61			3	93				
4:30		4	83			2	98				
4:45		6	80	13	293	8	96	15	384	28	677
5:00		6	87			7	110				
5:15		5	87			10	83				
5:30		12	101			10	101				
5:45		11	93	34	368	22	100	49	394	83	762
6:00		14	83			34	84				
6:15		11	92			36	100				
6:30		27	99			46	83				
6:45		39	63	91	337	56	94	172	361	263	698
7:00		38	60			65	71				
7:15		53	55			99	58				
7:30		85	45			116	56				
7:45		83	40	259	200	85	69	365	254	624	454
8:00		77	42			91	41				
8:15		71	41			72	51				
8:30		80	39			92	38				
8:45		64	24	292	146	99	42	354	172	646	318
9:00		63	24			85	28				
9:15		51	30			77	40				
9:30		39	16			91	30				
9:45		44	29	197	99	75	29	328	127	525	226
10:00		43	16			63	24				
10:15		41	21			52	21				
10:30		43	24			57	24				
10:45		54	18	181	79	68	18	240	87	421	166
11:00		45	12			66	17				
11:15		57	*			65	*				
11:30		50	*			56	*				
11:45		65	*	217	12	71	*	258	17	475	29
Total	1316	2539				1819	2987			3135	5526
Percent	34.1%	65.9%				37.8%	62.2%			36.2%	63.8%
Grand Total	2676	5038				3692	6062			6368	11100
Percent	34.7%	65.3%				37.9%	62.1%			36.5%	63.5%

ADT

ADT: 8,772

AADT: 8,772

Accurate Counts
978-664-2565

Location : Broadway
Location : East of Sunnyside Avenue
City/State: Arlington, MA

15289001

10/31/2022	Monday		Tuesday		Wednesday		Thursday		Friday		Saturday		Sunday		Week Average	
Time	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,	WB,	EB,
12:00 AM	*	*	*	*	20	22	15	21	*	*	*	*	*	*	18	22
1:00	*	*	*	*	11	5	6	5	*	*	*	*	*	*	8	5
2:00	*	*	*	*	6	9	2	4	*	*	*	*	*	*	4	6
3:00	*	*	*	*	9	9	9	8	*	*	*	*	*	*	9	8
4:00	*	*	*	*	11	18	13	15	*	*	*	*	*	*	12	16
5:00	*	*	*	*	39	46	34	49	*	*	*	*	*	*	36	48
6:00	*	*	*	*	99	199	91	172	*	*	*	*	*	*	95	186
7:00	*	*	*	*	283	345	259	365	*	*	*	*	*	*	271	355
8:00	*	*	*	*	291	328	292	354	*	*	*	*	*	*	292	341
9:00	*	*	*	*	203	351	197	328	*	*	*	*	*	*	200	340
10:00	*	*	*	*	190	238	181	240	*	*	*	*	*	*	186	239
11:00	*	*	*	*	198	303	217	258	*	*	*	*	*	*	208	280
12:00 PM	*	*	*	*	262	262	200	263	*	*	*	*	*	*	231	262
1:00	*	*	*	*	203	273	238	287	*	*	*	*	*	*	220	280
2:00	*	*	*	*	274	301	256	281	*	*	*	*	*	*	265	291
3:00	*	*	*	*	280	353	311	360	*	*	*	*	*	*	296	356
4:00	*	*	*	*	272	414	293	384	*	*	*	*	*	*	282	399
5:00	*	*	*	*	371	401	368	394	*	*	*	*	*	*	370	398
6:00	*	*	*	*	311	397	337	361	*	*	*	*	*	*	324	379
7:00	*	*	*	*	192	271	200	254	*	*	*	*	*	*	196	262
8:00	*	*	*	*	134	175	146	172	*	*	*	*	*	*	140	174
9:00	*	*	*	*	97	125	99	127	*	*	*	*	*	*	98	126
10:00	*	*	*	*	66	62	79	87	*	*	*	*	*	*	72	74
11:00	*	*	*	*	37	41	12	17	*	*	*	*	*	*	24	29
Total	0	0	0	0	3859	4948	3855	4806	0	0	0	0	0	0	3857	4876
Day	0		0		8807		8661		0		0		0		8733	
AM Peak					8:00	9:00	8:00	7:00							8:00	7:00
Volume					291	351	292	365							292	355
PM Peak					5:00	4:00	5:00	5:00							5:00	4:00
Volume					371	414	368	394							370	399
Comb Total	0		0		8807		8661		0		0		0		8733	
ADT	ADT: 8,772		AADT: 8,772													

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway

E/W Street : Broadway

City/State : Arlington, MA

Weather : Clear

File Name : 15289001

Site Code : 15289001

Start Date : 11/3/2022

Page No : 1

Groups Printed- Cars - Trucks

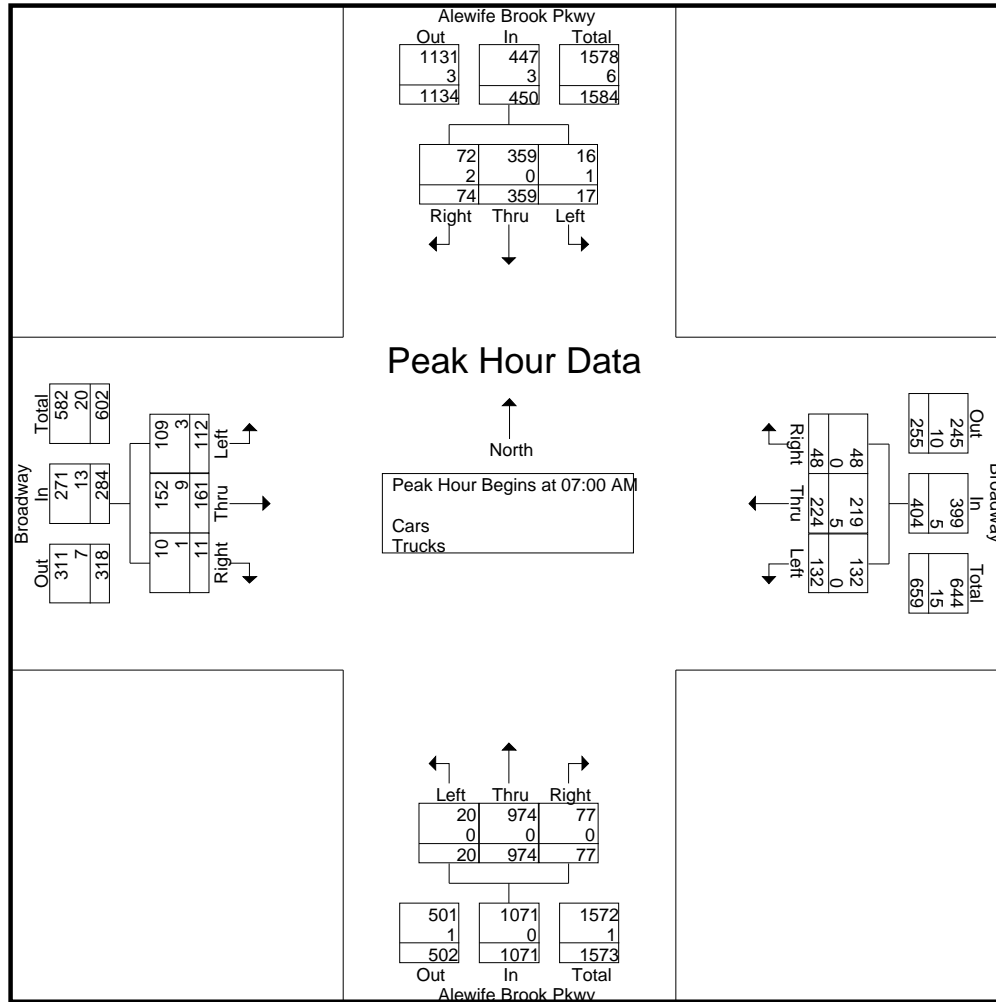
	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			Int. Total
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	4	112	22	25	28	15	3	283	10	24	22	0	548
07:15 AM	1	84	22	33	54	10	3	247	15	34	36	2	541
07:30 AM	6	73	16	46	69	12	5	223	28	24	49	5	556
07:45 AM	6	90	14	28	73	11	9	221	24	30	54	4	564
Total	17	359	74	132	224	48	20	974	77	112	161	11	2209
08:00 AM	6	88	28	34	65	5	12	201	12	21	50	8	530
08:15 AM	10	101	22	48	53	14	5	200	18	33	39	3	546
08:30 AM	4	78	21	45	63	10	7	177	27	21	51	3	507
08:45 AM	3	108	31	39	62	5	8	178	16	24	35	5	514
Total	23	375	102	166	243	34	32	756	73	99	175	19	2097
Grand Total	40	734	176	298	467	82	52	1730	150	211	336	30	4306
Apprch %	4.2	77.3	18.5	35.2	55.1	9.7	2.7	89.5	7.8	36.6	58.2	5.2	
Total %	0.9	17	4.1	6.9	10.8	1.9	1.2	40.2	3.5	4.9	7.8	0.7	
Cars	39	731	170	297	453	82	52	1729	150	208	319	29	4259
% Cars	97.5	99.6	96.6	99.7	97	100	100	99.9	100	98.6	94.9	96.7	98.9
Trucks	1	3	6	1	14	0	0	1	0	3	17	1	47
% Trucks	2.5	0.4	3.4	0.3	3	0	0	0.1	0	1.4	5.1	3.3	1.1

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	4	112	22	138	25	28	15	68	3	283	10	296	24	22	0	46	548
07:15 AM	1	84	22	107	33	54	10	97	3	247	15	265	34	36	2	72	541
07:30 AM	6	73	16	95	46	69	12	127	5	223	28	256	24	49	5	78	556
07:45 AM	6	90	14	110	28	73	11	112	9	221	24	254	30	54	4	88	564
Total Volume	17	359	74	450	132	224	48	404	20	974	77	1071	112	161	11	284	2209
% App. Total	3.8	79.8	16.4		32.7	55.4	11.9		1.9	90.9	7.2		39.4	56.7	3.9		
PHF	.708	.801	.841	.815	.717	.767	.800	.795	.556	.860	.688	.905	.824	.745	.550	.807	.979
Cars	16	359	72	447	132	219	48	399	20	974	77	1071	109	152	10	271	2188
% Cars	94.1	100	97.3	99.3	100	97.8	100	98.8	100	100	100	100	97.3	94.4	90.9	95.4	99.0
Trucks	1	0	2	3	0	5	0	5	0	0	0	0	3	9	1	13	21
% Trucks	5.9	0	2.7	0.7	0	2.2	0	1.2	0	0	0	0	2.7	5.6	9.1	4.6	1.0

Accurate Counts
978-664-2565

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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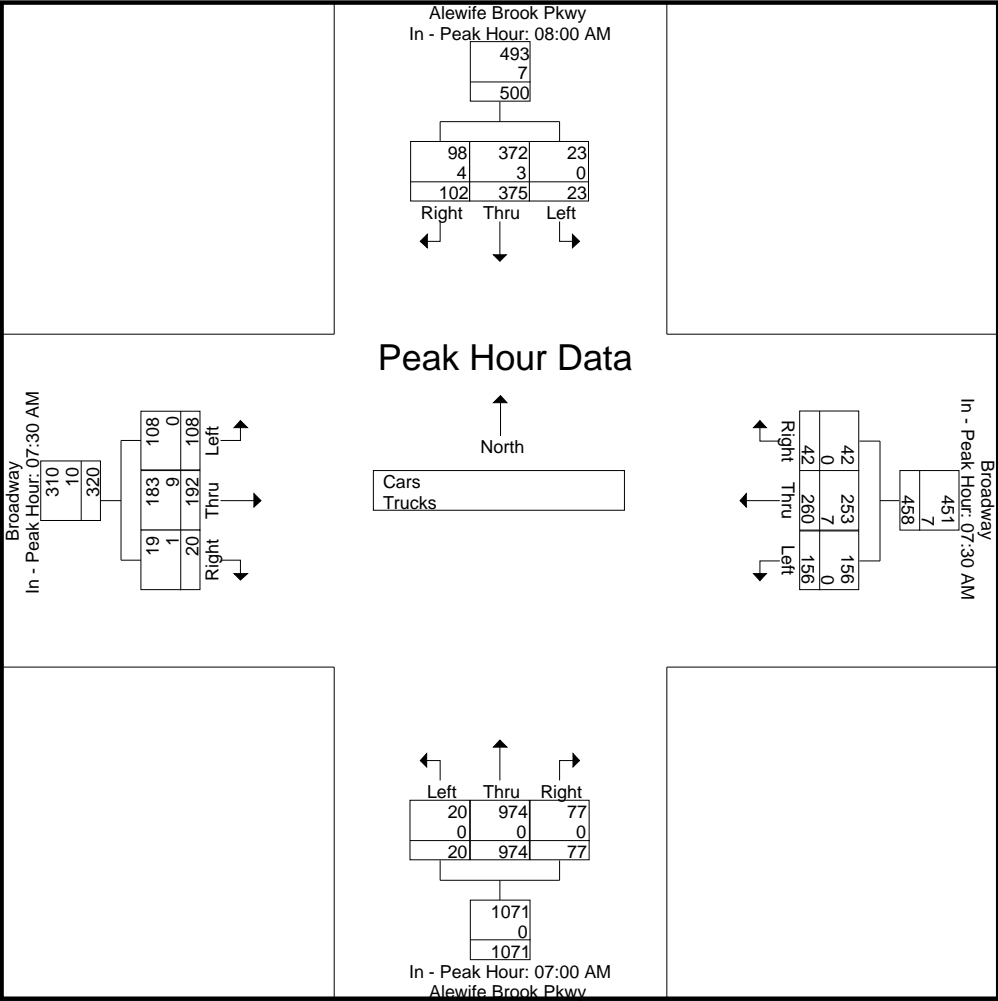


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	6	88	28	122	46	69	12	127	3	283	10	296	24	49	5	78
+15 mins.	10	101	22	133	28	73	11	112	3	247	15	265	30	54	4	88
+30 mins.	4	78	21	103	34	65	5	104	5	223	28	256	21	50	8	79
+45 mins.	3	108	31	142	48	53	14	115	9	221	24	254	33	39	3	75
Total Volume	23	375	102	500	156	260	42	458	20	974	77	1071	108	192	20	320
% App. Total	4.6	75	20.4		34.1	56.8	9.2		1.9	90.9	7.2		33.8	60	6.2	
PHF	.575	.868	.823	.880	.813	.890	.750	.902	.556	.860	.688	.905	.818	.889	.625	.909
Cars	23	372	98	493	156	253	42	451	20	974	77	1071	108	183	19	310
% Cars	100	99.2	96.1	98.6	100	97.3	100	98.5	100	100	100	100	100	95.3	95	96.9
Trucks	0	3	4	7	0	7	0	7	0	0	0	0	0	9	1	10
% Trucks	0	0.8	3.9	1.4	0	2.7	0	1.5	0	0	0	0	0	4.7	5	3.1

N/S Street : Alewife Brook Parkway
 E/W Street : Broadway
 City/State : Arlington, MA
 Weather : Clear

File Name : 15289001
 Site Code : 15289001
 Start Date : 11/3/2022
 Page No : 3



Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway

E/W Street : Broadway

City/State : Arlington, MA

Weather : Clear

File Name : 15289001

Site Code : 15289001

Start Date : 11/3/2022

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Groups Printed- Cars

	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			Int. Total
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	3	112	20	25	27	15	3	283	10	23	22	0	543
07:15 AM	1	84	22	33	52	10	3	247	15	32	32	2	533
07:30 AM	6	73	16	46	69	12	5	223	28	24	47	4	553
07:45 AM	6	90	14	28	71	11	9	221	24	30	51	4	559
Total	16	359	72	132	219	48	20	974	77	109	152	10	2188
08:00 AM	6	88	27	34	63	5	12	201	12	21	48	8	525
08:15 AM	10	100	20	48	50	14	5	199	18	33	37	3	537
08:30 AM	4	77	21	45	59	10	7	177	27	21	49	3	500
08:45 AM	3	107	30	38	62	5	8	178	16	24	33	5	509
Total	23	372	98	165	234	34	32	755	73	99	167	19	2071
Grand Total	39	731	170	297	453	82	52	1729	150	208	319	29	4259
Apprch %	4.1	77.8	18.1	35.7	54.4	9.9	2.7	89.5	7.8	37.4	57.4	5.2	
Total %	0.9	17.2	4	7	10.6	1.9	1.2	40.6	3.5	4.9	7.5	0.7	

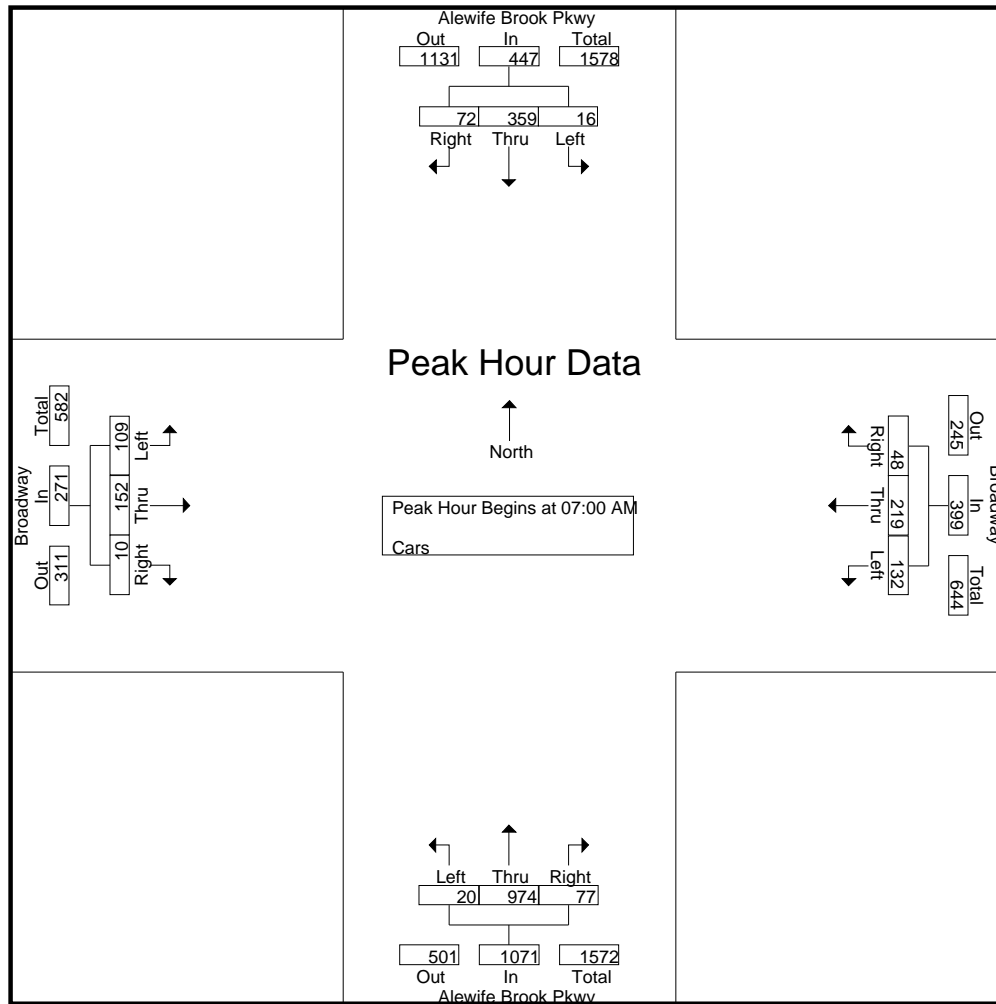
	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				Int. Total
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	3	112	20	135	25	27	15	67	3	283	10	296	23	22	0	45	543
07:15 AM	1	84	22	107	33	52	10	95	3	247	15	265	32	32	2	66	533
07:30 AM	6	73	16	95	46	69	12	127	5	223	28	256	24	47	4	75	553
07:45 AM	6	90	14	110	28	71	11	110	9	221	24	254	30	51	4	85	559
Total Volume	16	359	72	447	132	219	48	399	20	974	77	1071	109	152	10	271	2188
% App. Total	3.6	80.3	16.1		33.1	54.9	12		1.9	90.9	7.2		40.2	56.1	3.7		
PHF	.667	.801	.818	.828	.717	.771	.800	.785	.556	.860	.688	.905	.852	.745	.625	.797	.979

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street : Broadway
 City/State : Arlington, MA
 Weather : Clear

File Name : 15289001
 Site Code : 15289001
 Start Date : 11/3/2022
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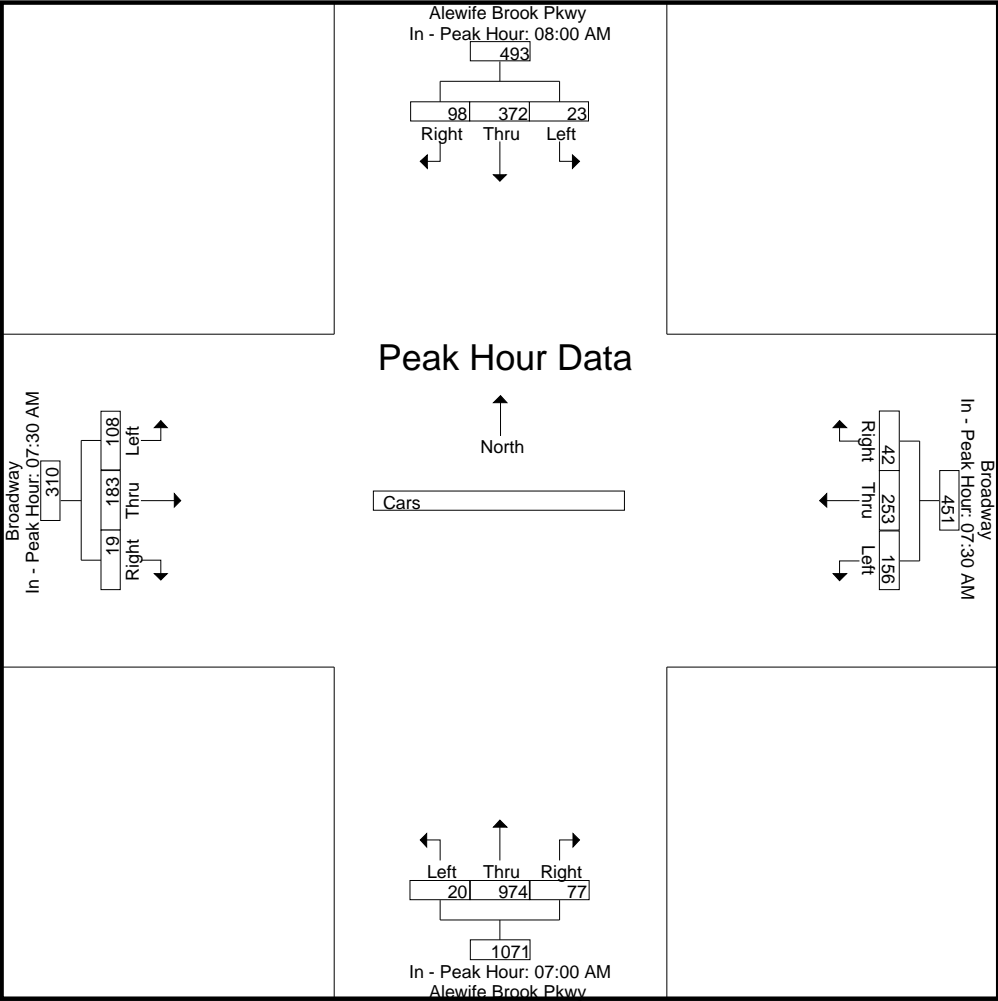


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	08:00 AM				07:30 AM				07:00 AM				07:30 AM			
+0 mins.	6	88	27	121	46	69	12	127	3	283	10	296	24	47	4	75
+15 mins.	10	100	20	130	28	71	11	110	3	247	15	265	30	51	4	85
+30 mins.	4	77	21	102	34	63	5	102	5	223	28	256	21	48	8	77
+45 mins.	3	107	30	140	48	50	14	112	9	221	24	254	33	37	3	73
Total Volume	23	372	98	493	156	253	42	451	20	974	77	1071	108	183	19	310
% App. Total	4.7	75.5	19.9		34.6	56.1	9.3		1.9	90.9	7.2		34.8	59	6.1	
PHF	.575	.869	.817	.880	.813	.891	.750	.888	.556	.860	.688	.905	.818	.897	.594	.912

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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Accurate Counts

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N/S Street : Alewife Brook Parkway

E/W Street : Broadway

City/State : Arlington, MA

Weather : Clear

File Name : 15289001

Site Code : 15289001

Start Date : 11/3/2022

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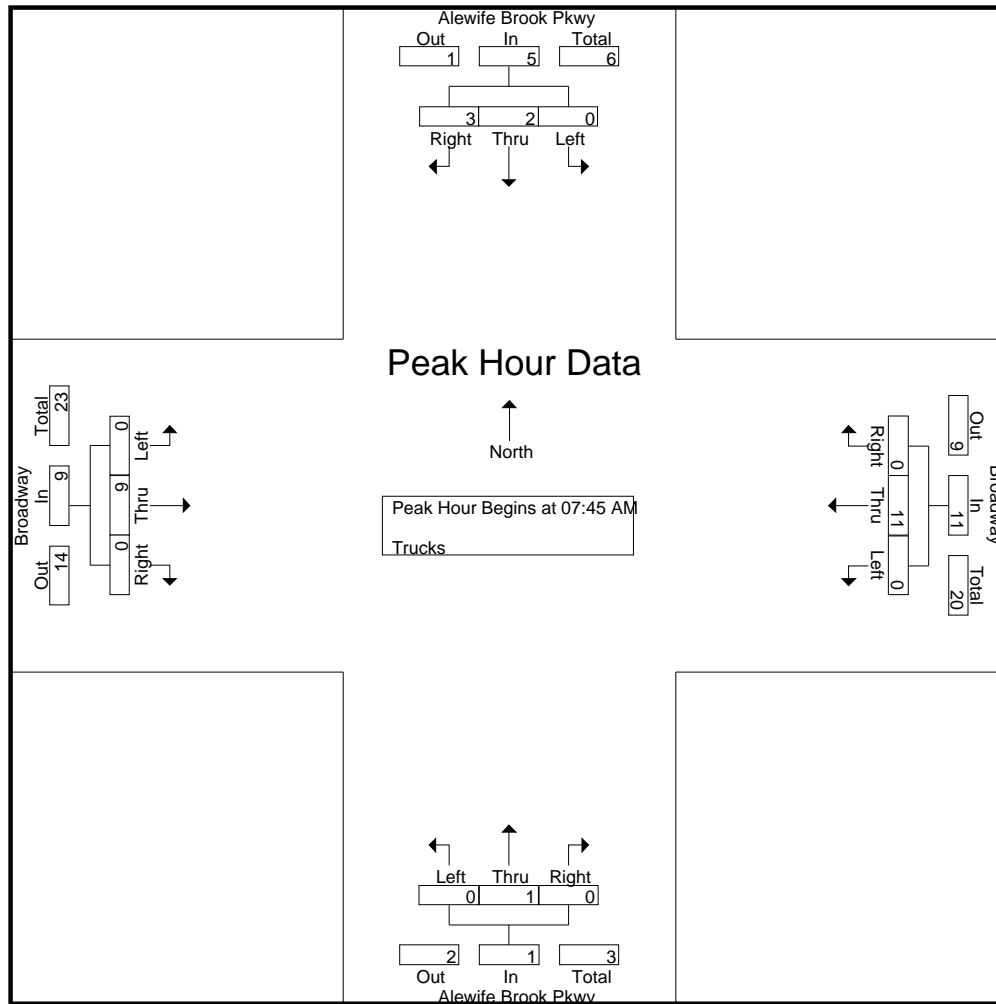
Groups Printed- Trucks

	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			Int. Total
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
07:00 AM	1	0	2	0	1	0	0	0	0	1	0	0	5
07:15 AM	0	0	0	0	2	0	0	0	0	2	4	0	8
07:30 AM	0	0	0	0	0	0	0	0	0	0	2	1	3
07:45 AM	0	0	0	0	2	0	0	0	0	0	3	0	5
Total	1	0	2	0	5	0	0	0	0	3	9	1	21
08:00 AM	0	0	1	0	2	0	0	0	0	0	2	0	5
08:15 AM	0	1	2	0	3	0	0	1	0	0	2	0	9
08:30 AM	0	1	0	0	4	0	0	0	0	0	2	0	7
08:45 AM	0	1	1	1	0	0	0	0	0	0	2	0	5
Total	0	3	4	1	9	0	0	1	0	0	8	0	26
Grand Total	1	3	6	1	14	0	0	1	0	3	17	1	47
Apprch %	10	30	60	6.7	93.3	0	0	100	0	14.3	81	4.8	
Total %	2.1	6.4	12.8	2.1	29.8	0	0	2.1	0	6.4	36.2	2.1	

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				Int. Total
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	0	0	0	0	0	2	0	2	0	0	0	0	0	3	0	3	5
08:00 AM	0	0	1	1	0	2	0	2	0	0	0	0	0	2	0	2	5
08:15 AM	0	1	2	3	0	3	0	3	0	1	0	1	0	2	0	2	9
08:30 AM	0	1	0	1	0	4	0	4	0	0	0	0	0	2	0	2	7
Total Volume	0	2	3	5	0	11	0	11	0	1	0	1	0	9	0	9	26
% App. Total	0	40	60		0	100	0		0	100	0		0	100	0		
PHF	.000	.500	.375	.417	.000	.688	.000	.688	.000	.250	.000	.250	.000	.750	.000	.750	.722

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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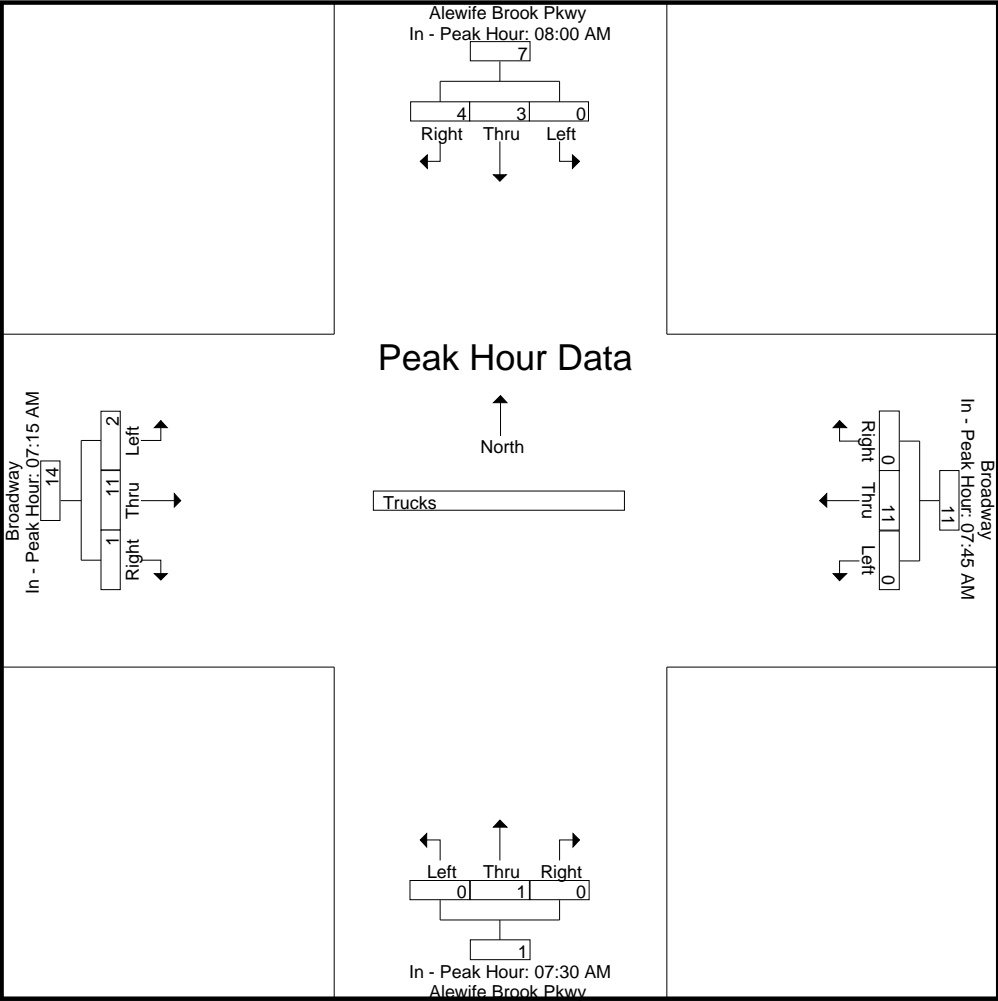


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	08:00 AM				07:45 AM				07:30 AM				07:15 AM			
+0 mins.	0	0	1	1	0	2	0	2	0	0	0	0	2	4	0	6
+15 mins.	0	1	2	3	0	2	0	2	0	0	0	0	0	2	1	3
+30 mins.	0	1	0	1	0	3	0	3	0	0	0	0	0	3	0	3
+45 mins.	0	1	1	2	0	4	0	4	0	1	0	1	0	2	0	2
Total Volume	0	3	4	7	0	11	0	11	0	1	0	1	2	11	1	14
% App. Total	0	42.9	57.1		0	100	0		0	100	0		14.3	78.6	7.1	
PHF	.000	.750	.500	.583	.000	.688	.000	.688	.000	.250	.000	.250	.250	.688	.250	.583

N/S Street : Alewife Brook Parkway
 E/W Street : Broadway
 City/State : Arlington, MA
 Weather : Clear

File Name : 15289001
 Site Code : 15289001
 Start Date : 11/3/2022
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Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway

E/W Street : Broadway

City/State : Arlington, MA

Weather : Clear

File Name : 15289001

Site Code : 15289001

Start Date : 11/3/2022

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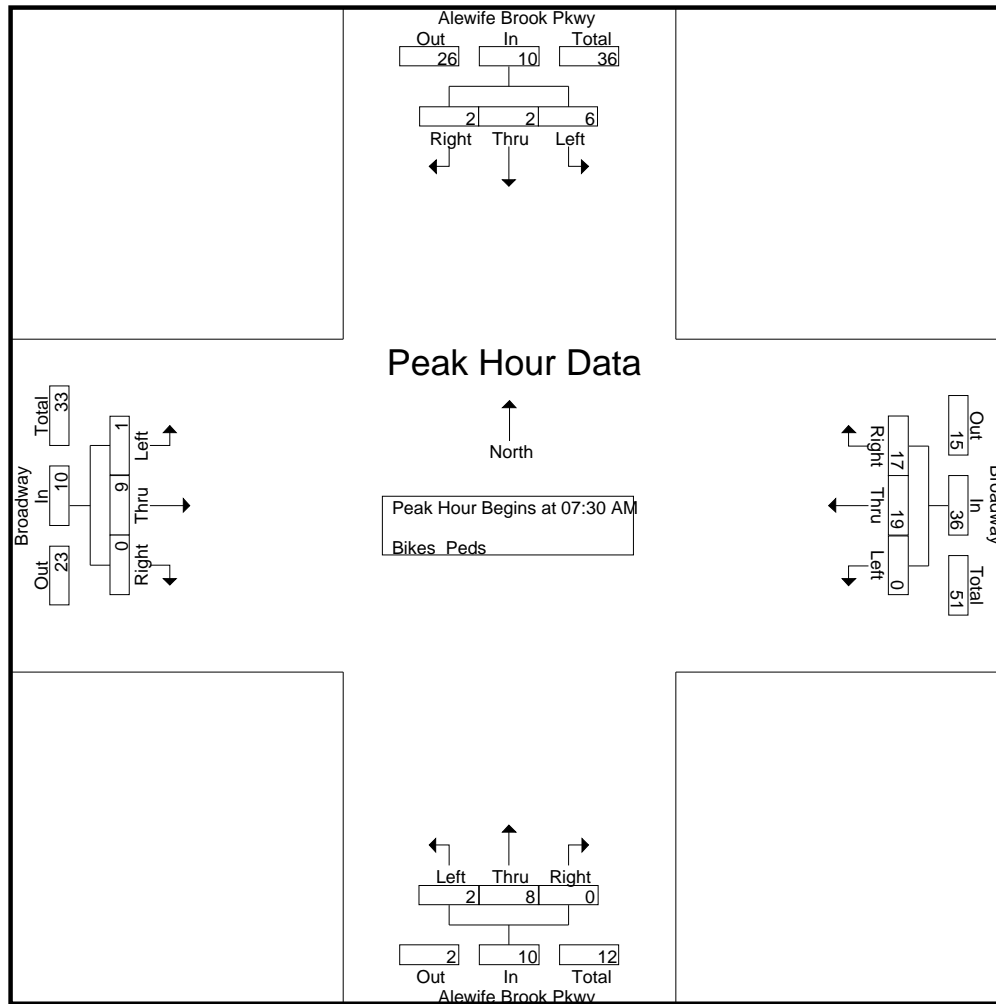
Groups Printed- Bikes Peds

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
07:00 AM	0	0	0	2	0	0	1	3	0	0	0	3	0	2	1	0	8	4	12
07:15 AM	0	0	0	2	0	0	0	8	0	0	0	0	1	1	0	1	11	2	13
07:30 AM	0	0	0	5	0	3	3	7	0	3	0	6	0	1	0	3	21	10	31
07:45 AM	2	1	1	5	0	3	7	8	0	4	0	4	1	2	0	0	17	21	38
Total	2	1	1	14	0	6	11	26	0	7	0	13	2	6	1	4	57	37	94
08:00 AM	1	0	0	6	0	9	5	8	2	0	0	6	0	3	0	2	22	20	42
08:15 AM	3	1	1	2	0	4	2	9	0	1	0	11	0	3	0	3	25	15	40
08:30 AM	0	0	0	2	0	1	0	7	0	3	0	7	0	0	0	0	16	4	20
08:45 AM	1	0	0	6	0	3	0	4	0	1	0	8	2	1	0	2	20	8	28
Total	5	1	1	16	0	17	7	28	2	5	0	32	2	7	0	7	83	47	130
Grand Total	7	2	2	30	0	23	18	54	2	12	0	45	4	13	1	11	140	84	224
Apprch %	63.6	18.2	18.2		0	56.1	43.9		14.3	85.7	0		22.2	72.2	5.6				
Total %	8.3	2.4	2.4		0	27.4	21.4		2.4	14.3	0		4.8	15.5	1.2		62.5	37.5	

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	0	0	0	0	3	3	6	0	3	0	3	0	1	0	1	10
07:45 AM	2	1	1	4	0	3	7	10	0	4	0	4	1	2	0	3	21
08:00 AM	1	0	0	1	0	9	5	14	2	0	0	2	0	3	0	3	20
08:15 AM	3	1	1	5	0	4	2	6	0	1	0	1	0	3	0	3	15
Total Volume	6	2	2	10	0	19	17	36	2	8	0	10	1	9	0	10	66
% App. Total	60	20	20		0	52.8	47.2		20	80	0		10	90	0		
PHF	.500	.500	.500	.500	.000	.528	.607	.643	.250	.500	.000	.625	.250	.750	.000	.833	.786

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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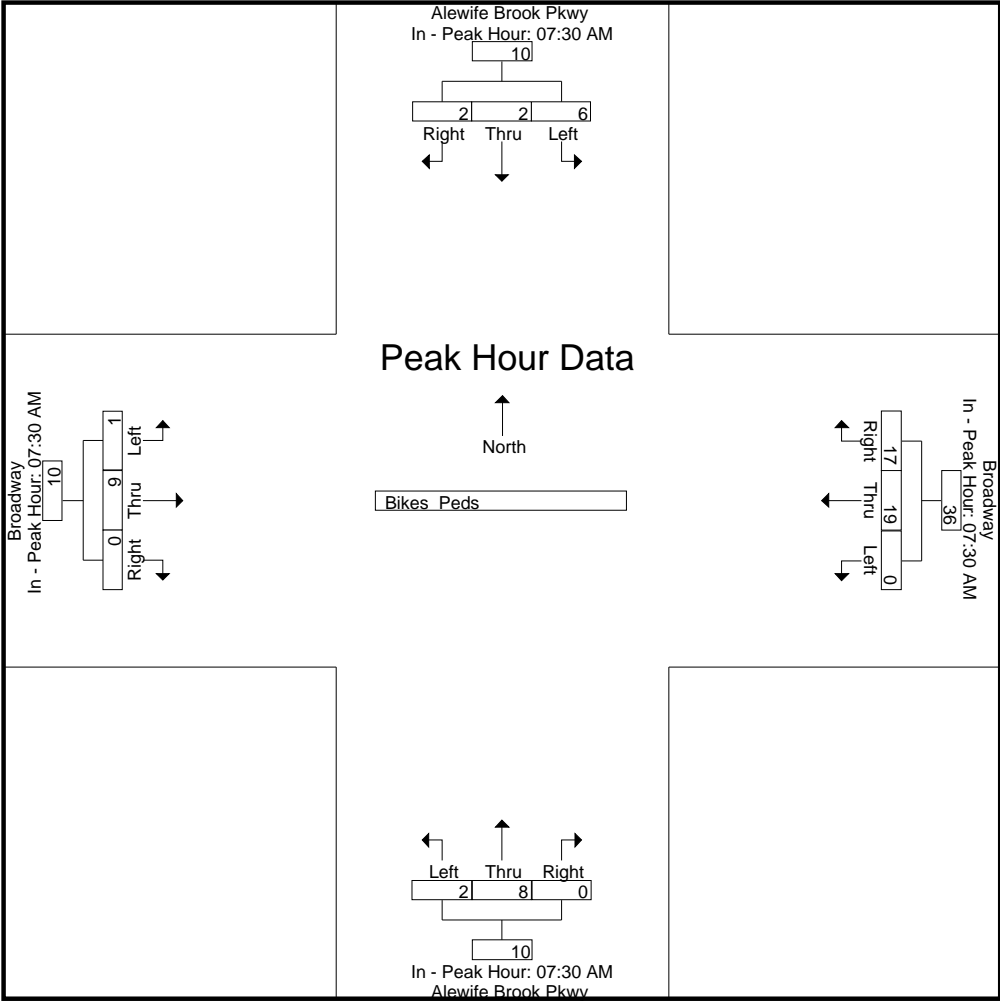


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:30 AM				07:30 AM				07:30 AM			
+0 mins.	0	0	0	0	0	3	3	6	0	3	0	3	0	1	0	1
+15 mins.	2	1	1	4	0	3	7	10	0	4	0	4	1	2	0	3
+30 mins.	1	0	0	1	0	9	5	14	2	0	0	2	0	3	0	3
+45 mins.	3	1	1	5	0	4	2	6	0	1	0	1	0	3	0	3
Total Volume	6	2	2	10	0	19	17	36	2	8	0	10	1	9	0	10
% App. Total	60	20	20		0	52.8	47.2		20	80	0		10	90	0	
PHF	.500	.500	.500	.500	.000	.528	.607	.643	.250	.500	.000	.625	.250	.750	.000	.833

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
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Accurate Counts

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N/S Street : Alewife Brook Parkway

E/W Street : Broadway

City/State : Arlington, MA

Weather : Clear

File Name : 15289001

Site Code : 15289001

Start Date : 11/3/2022

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Groups Printed- Cars - Trucks

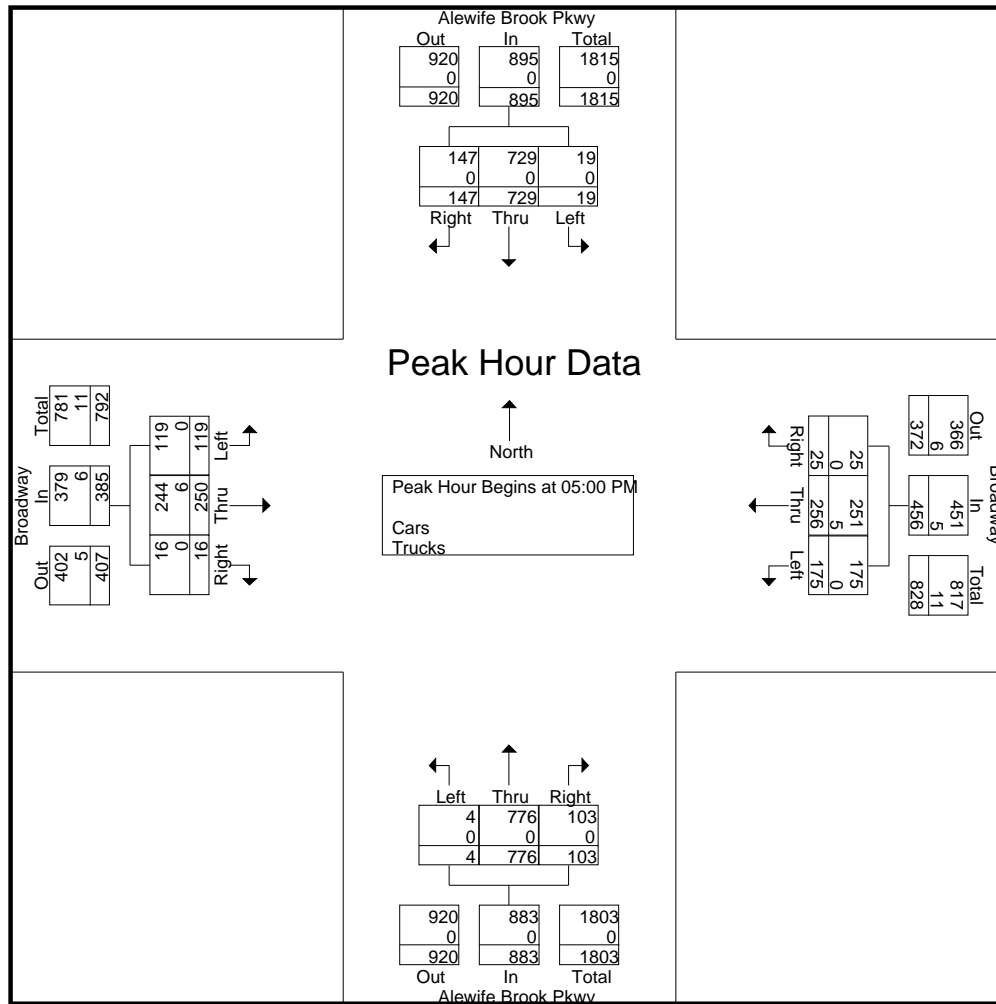
	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			Int. Total
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	5	189	33	46	55	5	1	183	16	27	52	2	614
04:15 PM	5	196	25	47	41	9	0	226	19	28	38	4	638
04:30 PM	4	164	30	48	57	12	2	200	20	26	61	4	628
04:45 PM	9	197	23	51	55	9	3	173	16	27	49	4	616
Total	23	746	111	192	208	35	6	782	71	108	200	14	2496
05:00 PM	6	185	36	36	41	11	0	246	21	23	62	5	672
05:15 PM	7	192	44	54	89	5	2	194	22	30	60	2	701
05:30 PM	2	185	34	41	54	3	1	174	31	32	59	3	619
05:45 PM	4	167	33	44	72	6	1	162	29	34	69	6	627
Total	19	729	147	175	256	25	4	776	103	119	250	16	2619
Grand Total	42	1475	258	367	464	60	10	1558	174	227	450	30	5115
Apprch %	2.4	83.1	14.5	41.2	52.1	6.7	0.6	89.4	10	32.1	63.6	4.2	
Total %	0.8	28.8	5	7.2	9.1	1.2	0.2	30.5	3.4	4.4	8.8	0.6	
Cars	42	1473	258	366	455	60	10	1558	174	227	438	30	5091
% Cars	100	99.9	100	99.7	98.1	100	100	100	100	100	97.3	100	99.5
Trucks	0	2	0	1	9	0	0	0	0	0	12	0	24
% Trucks	0	0.1	0	0.3	1.9	0	0	0	0	0	2.7	0	0.5

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	6	185	36	227	36	41	11	88	0	246	21	267	23	62	5	90	672
05:15 PM	7	192	44	243	54	89	5	148	2	194	22	218	30	60	2	92	701
05:30 PM	2	185	34	221	41	54	3	98	1	174	31	206	32	59	3	94	619
05:45 PM	4	167	33	204	44	72	6	122	1	162	29	192	34	69	6	109	627
Total Volume	19	729	147	895	175	256	25	456	4	776	103	883	119	250	16	385	2619
% App. Total	2.1	81.5	16.4		38.4	56.1	5.5		0.5	87.9	11.7		30.9	64.9	4.2		
PHF	.679	.949	.835	.921	.810	.719	.568	.770	.500	.789	.831	.827	.875	.906	.667	.883	.934
Cars	19	729	147	895	175	251	25	451	4	776	103	883	119	244	16	379	2608
% Cars	100	100	100	100	100	98.0	100	98.9	100	100	100	100	100	97.6	100	98.4	99.6
Trucks	0	0	0	0	0	5	0	5	0	0	0	0	0	6	0	6	11
% Trucks	0	0	0	0	0	2.0	0	1.1	0	0	0	0	0	2.4	0	1.6	0.4

Accurate Counts
978-664-2565

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 2

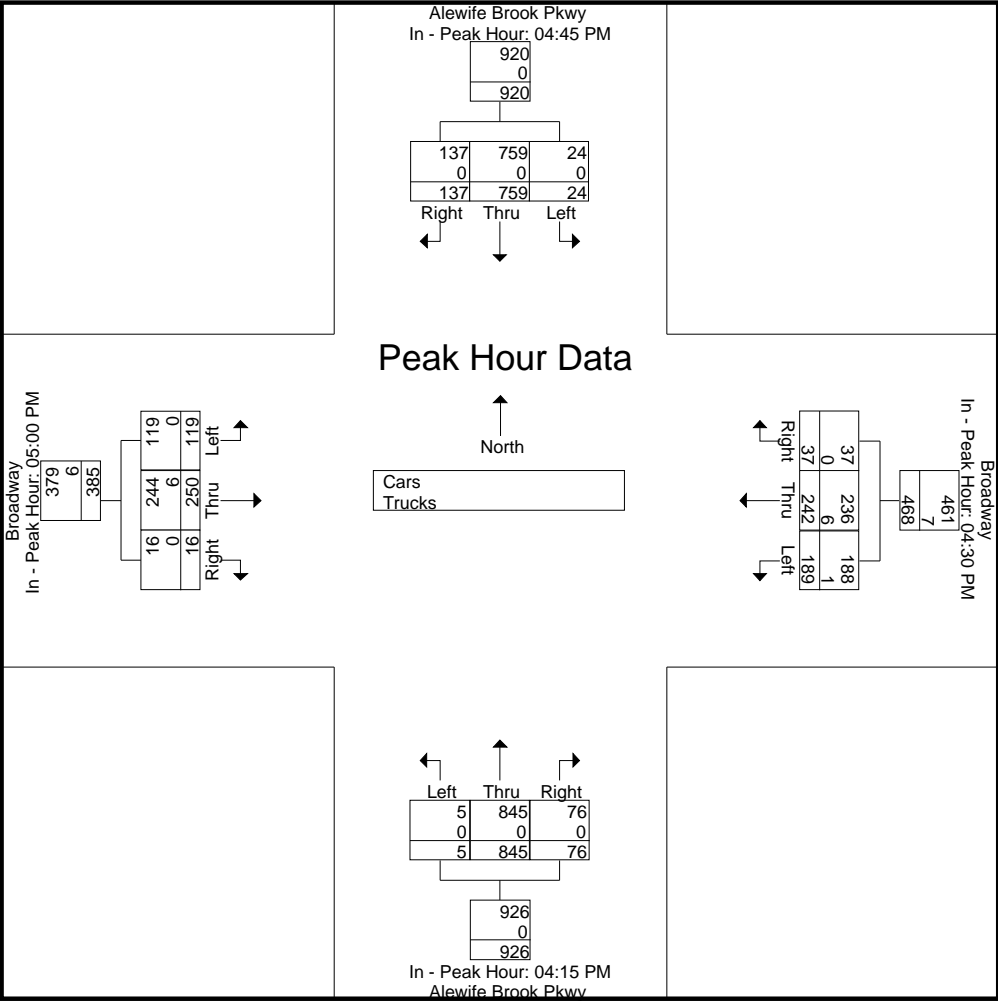


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:15 PM				05:00 PM			
+0 mins.	9	197	23	229	48	57	12	117	0	226	19	245	23	62	5	90
+15 mins.	6	185	36	227	51	55	9	115	2	200	20	222	30	60	2	92
+30 mins.	7	192	44	243	36	41	11	88	3	173	16	192	32	59	3	94
+45 mins.	2	185	34	221	54	89	5	148	0	246	21	267	34	69	6	109
Total Volume	24	759	137	920	189	242	37	468	5	845	76	926	119	250	16	385
% App. Total	2.6	82.5	14.9		40.4	51.7	7.9		0.5	91.3	8.2		30.9	64.9	4.2	
PHF	.667	.963	.778	.947	.875	.680	.771	.791	.417	.859	.905	.867	.875	.906	.667	.883
Cars	24	759	137	920	188	236	37	461	5	845	76	926	119	244	16	379
% Cars	100	100	100	100	99.5	97.5	100	98.5	100	100	100	100	100	97.6	100	98.4
Trucks	0	0	0	0	1	6	0	7	0	0	0	0	0	6	0	6
% Trucks	0	0	0	0	0.5	2.5	0	1.5	0	0	0	0	0	2.4	0	1.6

N/S Street : Alewife Brook Parkway
 E/W Street : Broadway
 City/State : Arlington, MA
 Weather : Clear

File Name : 15289001
 Site Code : 15289001
 Start Date : 11/3/2022
 Page No : 3



Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway

E/W Street : Broadway

City/State : Arlington, MA

Weather : Clear

File Name : 15289001

Site Code : 15289001

Start Date : 11/3/2022

Page No : 4

Groups Printed- Cars

	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			Int. Total
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	5	189	33	46	54	5	1	183	16	27	50	2	611
04:15 PM	5	195	25	47	40	9	0	226	19	28	37	4	635
04:30 PM	4	163	30	47	55	12	2	200	20	26	59	4	622
04:45 PM	9	197	23	51	55	9	3	173	16	27	48	4	615
Total	23	744	111	191	204	35	6	782	71	108	194	14	2483
05:00 PM	6	185	36	36	39	11	0	246	21	23	60	5	668
05:15 PM	7	192	44	54	87	5	2	194	22	30	59	2	698
05:30 PM	2	185	34	41	53	3	1	174	31	32	58	3	617
05:45 PM	4	167	33	44	72	6	1	162	29	34	67	6	625
Total	19	729	147	175	251	25	4	776	103	119	244	16	2608
Grand Total	42	1473	258	366	455	60	10	1558	174	227	438	30	5091
Apprch %	2.4	83.1	14.6	41.5	51.6	6.8	0.6	89.4	10	32.7	63	4.3	
Total %	0.8	28.9	5.1	7.2	8.9	1.2	0.2	30.6	3.4	4.5	8.6	0.6	

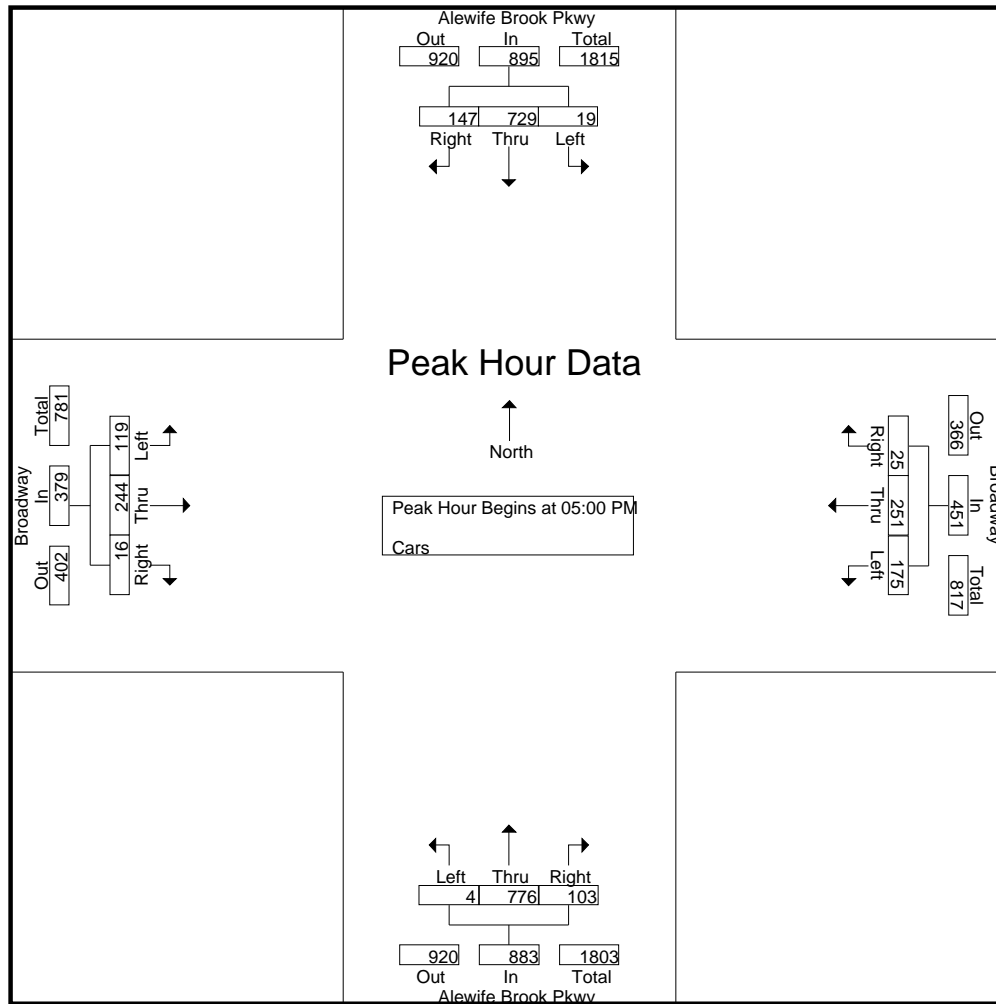
	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				Int. Total
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	6	185	36	227	36	39	11	86	0	246	21	267	23	60	5	88	668
05:15 PM	7	192	44	243	54	87	5	146	2	194	22	218	30	59	2	91	698
05:30 PM	2	185	34	221	41	53	3	97	1	174	31	206	32	58	3	93	617
05:45 PM	4	167	33	204	44	72	6	122	1	162	29	192	34	67	6	107	625
Total Volume	19	729	147	895	175	251	25	451	4	776	103	883	119	244	16	379	2608
% App. Total	2.1	81.5	16.4		38.8	55.7	5.5		0.5	87.9	11.7		31.4	64.4	4.2		
PHF	.679	.949	.835	.921	.810	.721	.568	.772	.500	.789	.831	.827	.875	.910	.667	.886	.934

Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway
 E/W Street : Broadway
 City/State : Arlington, MA
 Weather : Clear

File Name : 15289001
 Site Code : 15289001
 Start Date : 11/3/2022
 Page No : 5

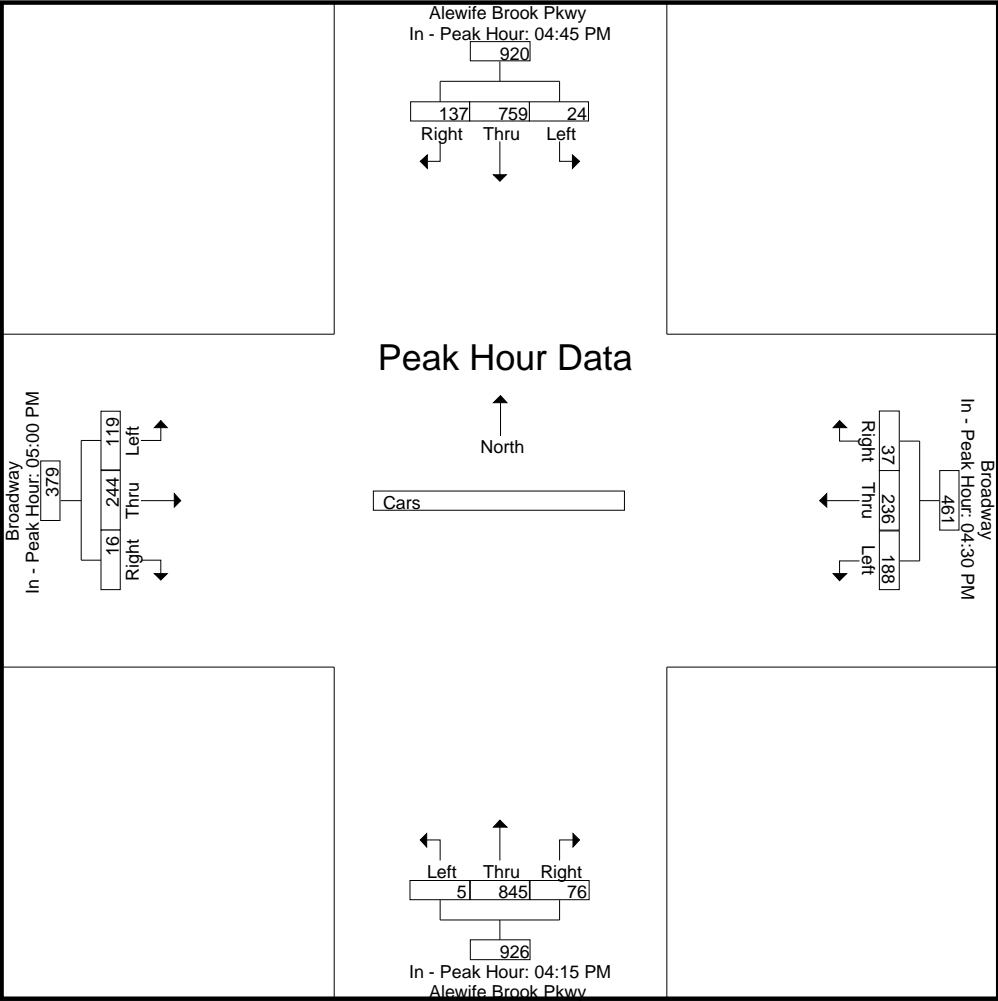


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:15 PM				05:00 PM			
+0 mins.	9	197	23	229	47	55	12	114	0	226	19	245	23	60	5	88
+15 mins.	6	185	36	227	51	55	9	115	2	200	20	222	30	59	2	91
+30 mins.	7	192	44	243	36	39	11	86	3	173	16	192	32	58	3	93
+45 mins.	2	185	34	221	54	87	5	146	0	246	21	267	34	67	6	107
Total Volume	24	759	137	920	188	236	37	461	5	845	76	926	119	244	16	379
% App. Total	2.6	82.5	14.9		40.8	51.2	8		0.5	91.3	8.2		31.4	64.4	4.2	
PHF	.667	.963	.778	.947	.870	.678	.771	.789	.417	.859	.905	.867	.875	.910	.667	.886

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 6



Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway

E/W Street : Broadway

City/State : Arlington, MA

Weather : Clear

File Name : 15289001

Site Code : 15289001

Start Date : 11/3/2022

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Groups Printed- Trucks

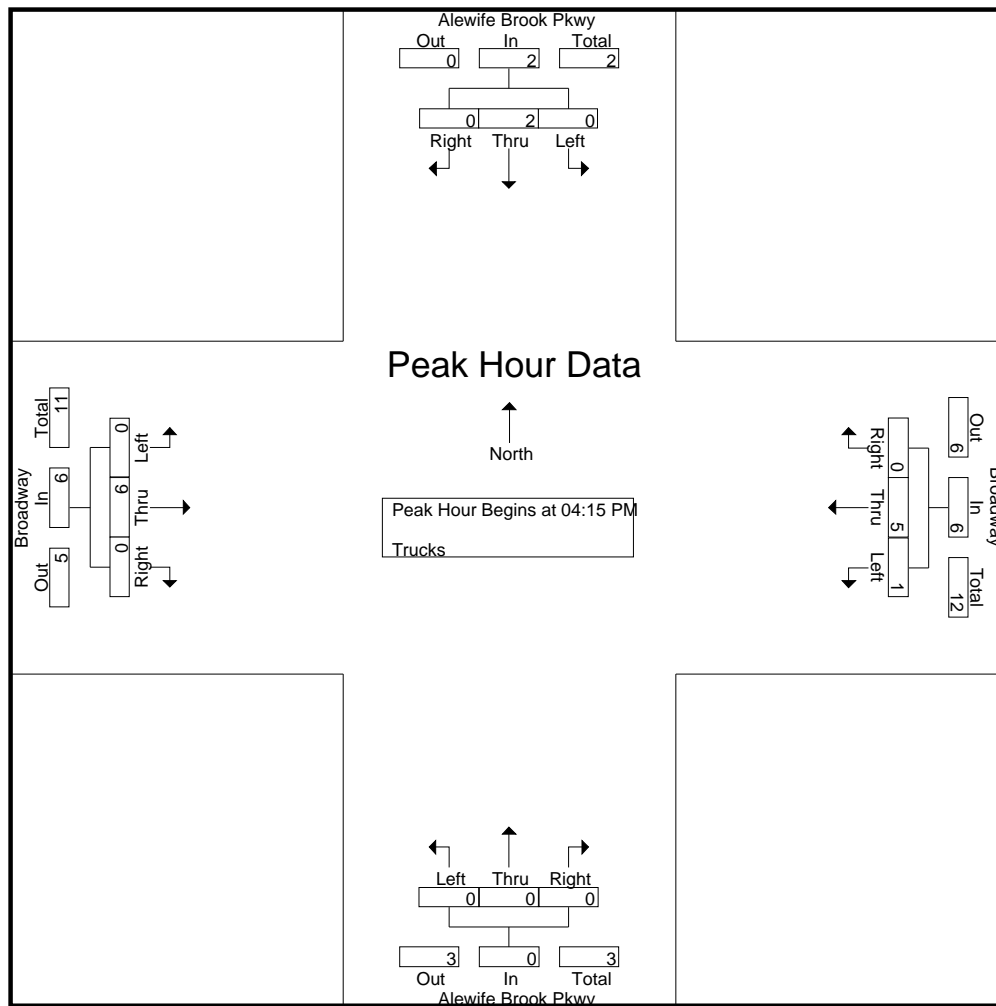
	Alewife Brook Pkwy From North			Broadway From East			Alewife Brook Pkwy From South			Broadway From West			Int. Total
Start Time	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
04:00 PM	0	0	0	0	1	0	0	0	0	0	2	0	3
04:15 PM	0	1	0	0	1	0	0	0	0	0	1	0	3
04:30 PM	0	1	0	1	2	0	0	0	0	0	2	0	6
04:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
Total	0	2	0	1	4	0	0	0	0	0	6	0	13
05:00 PM	0	0	0	0	2	0	0	0	0	0	2	0	4
05:15 PM	0	0	0	0	2	0	0	0	0	0	1	0	3
05:30 PM	0	0	0	0	1	0	0	0	0	0	1	0	2
05:45 PM	0	0	0	0	0	0	0	0	0	0	2	0	2
Total	0	0	0	0	5	0	0	0	0	0	6	0	11
Grand Total	0	2	0	1	9	0	0	0	0	0	12	0	24
Apprch %	0	100	0	10	90	0	0	0	0	0	100	0	
Total %	0	8.3	0	4.2	37.5	0	0	0	0	0	50	0	

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				Int. Total
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:15 PM																	
04:15 PM	0	1	0	1	0	1	0	1	0	0	0	0	0	1	0	1	3
04:30 PM	0	1	0	1	1	2	0	3	0	0	0	0	0	2	0	2	6
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
05:00 PM	0	0	0	0	0	2	0	2	0	0	0	0	0	2	0	2	4
Total Volume	0	2	0	2	1	5	0	6	0	0	0	0	0	6	0	6	14
% App. Total	0	100	0		16.7	83.3	0		0	0	0		0	100	0		
PHF	.000	.500	.000	.500	.250	.625	.000	.500	.000	.000	.000	.000	.000	.750	.000	.750	.583

Accurate Counts
978-664-2565

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 8

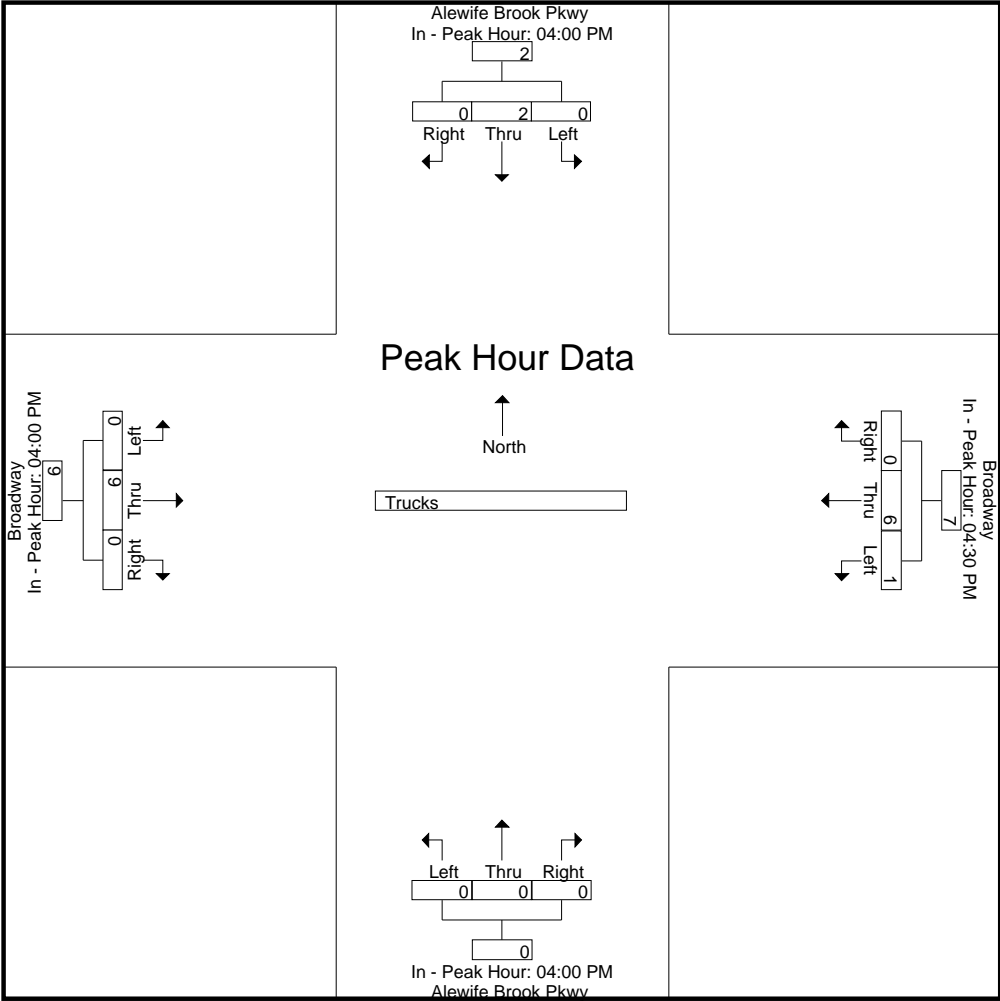


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				04:30 PM				04:00 PM				04:00 PM			
+0 mins.	0	0	0	0	1	2	0	3	0	0	0	0	0	2	0	2
+15 mins.	0	1	0	1	0	0	0	0	0	0	0	0	0	1	0	1
+30 mins.	0	1	0	1	0	2	0	2	0	0	0	0	0	2	0	2
+45 mins.	0	0	0	0	0	2	0	2	0	0	0	0	0	1	0	1
Total Volume	0	2	0	2	1	6	0	7	0	0	0	0	0	6	0	6
% App. Total	0	100	0		14.3	85.7	0		0	0	0		0	100	0	
PHF	.000	.500	.000	.500	.250	.750	.000	.583	.000	.000	.000	.000	.000	.750	.000	.750

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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Accurate Counts

978-664-2565

N/S Street : Alewife Brook Parkway

E/W Street : Broadway

City/State : Arlington, MA

Weather : Clear

File Name : 15289001

Site Code : 15289001

Start Date : 11/3/2022

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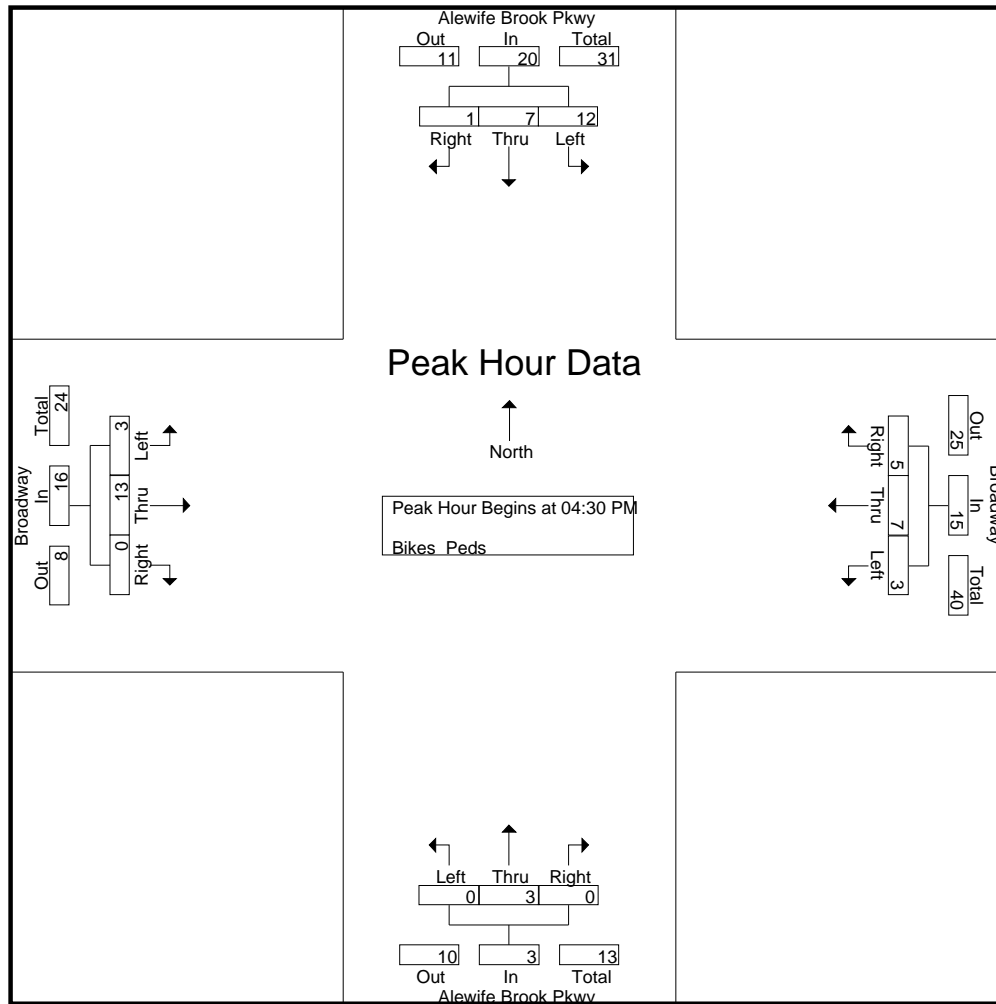
Groups Printed- Bikes Peds

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West				Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds			
04:00 PM	1	1	0	16	0	2	0	6	0	0	0	10	0	2	0	2	34	6	40
04:15 PM	1	5	1	7	0	2	1	5	0	0	0	11	0	5	0	3	26	15	41
04:30 PM	4	1	0	6	2	1	1	9	0	2	0	14	1	4	0	3	32	16	48
04:45 PM	3	3	0	9	1	2	1	12	0	1	0	22	0	3	0	0	43	14	57
Total	9	10	1	38	3	7	3	32	0	3	0	57	1	14	0	8	135	51	186
05:00 PM	2	2	0	7	0	0	1	10	0	0	0	13	1	2	0	3	33	8	41
05:15 PM	3	1	1	3	0	4	2	25	0	0	0	29	1	4	0	9	66	16	82
05:30 PM	4	4	0	11	0	1	0	15	0	0	0	24	0	0	0	7	57	9	66
05:45 PM	0	3	1	10	1	1	1	12	0	0	0	9	0	4	0	5	36	11	47
Total	9	10	2	31	1	6	4	62	0	0	0	75	2	10	0	24	192	44	236
Grand Total	18	20	3	69	4	13	7	94	0	3	0	132	3	24	0	32	327	95	422
Apprch %	43.9	48.8	7.3		16.7	54.2	29.2		0	100	0		11.1	88.9	0				
Total %	18.9	21.1	3.2		4.2	13.7	7.4		0	3.2	0		3.2	25.3	0		77.5	22.5	

	Alewife Brook Pkwy From North				Broadway From East				Alewife Brook Pkwy From South				Broadway From West						
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total		
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																			
Peak Hour for Entire Intersection Begins at 04:30 PM																			
04:30 PM	4	1	0	5	2	1	1	4	0	2	0	2	1	4	0	5		16	
04:45 PM	3	3	0	6	1	2	1	4	0	1	0	1	0	3	0	3		14	
05:00 PM	2	2	0	4	0	0	1	1	0	0	0	0	1	2	0	3		8	
05:15 PM	3	1	1	5	0	4	2	6	0	0	0	0	1	4	0	5		16	
Total Volume	12	7	1	20	3	7	5	15	0	3	0	3	3	13	0	16		54	
% App. Total	60	35	5		20	46.7	33.3		0	100	0		18.8	81.2	0				
PHF	.750	.583	.250	.833	.375	.438	.625	.625	.000	.375	.000	.375	.750	.813	.000	.800		.844	

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
Page No : 11

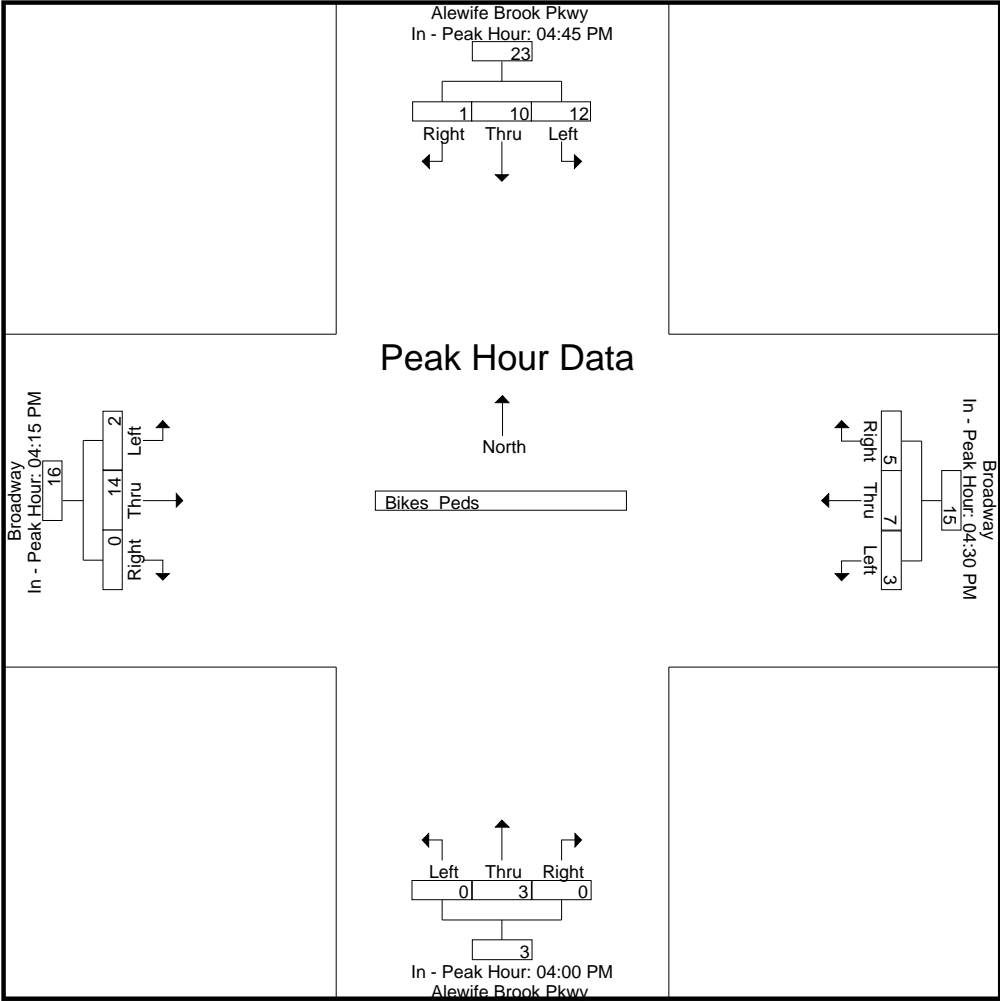


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:45 PM				04:30 PM				04:00 PM				04:15 PM			
+0 mins.	3	3	0	6	2	1	1	4	0	0	0	0	0	5	0	5
+15 mins.	2	2	0	4	1	2	1	4	0	0	0	0	1	4	0	5
+30 mins.	3	1	1	5	0	0	1	1	0	2	0	2	0	3	0	3
+45 mins.	4	4	0	8	0	4	2	6	0	1	0	1	1	2	0	3
Total Volume	12	10	1	23	3	7	5	15	0	3	0	3	2	14	0	16
% App. Total	52.2	43.5	4.3		20	46.7	33.3		0	100	0		12.5	87.5	0	
PHF	.750	.625	.250	.719	.375	.438	.625	.625	.000	.375	.000	.375	.500	.700	.000	.800

N/S Street : Alewife Brook Parkway
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289001
Site Code : 15289001
Start Date : 11/3/2022
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Accurate Counts

978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 1

Groups Printed- Cars - Trucks

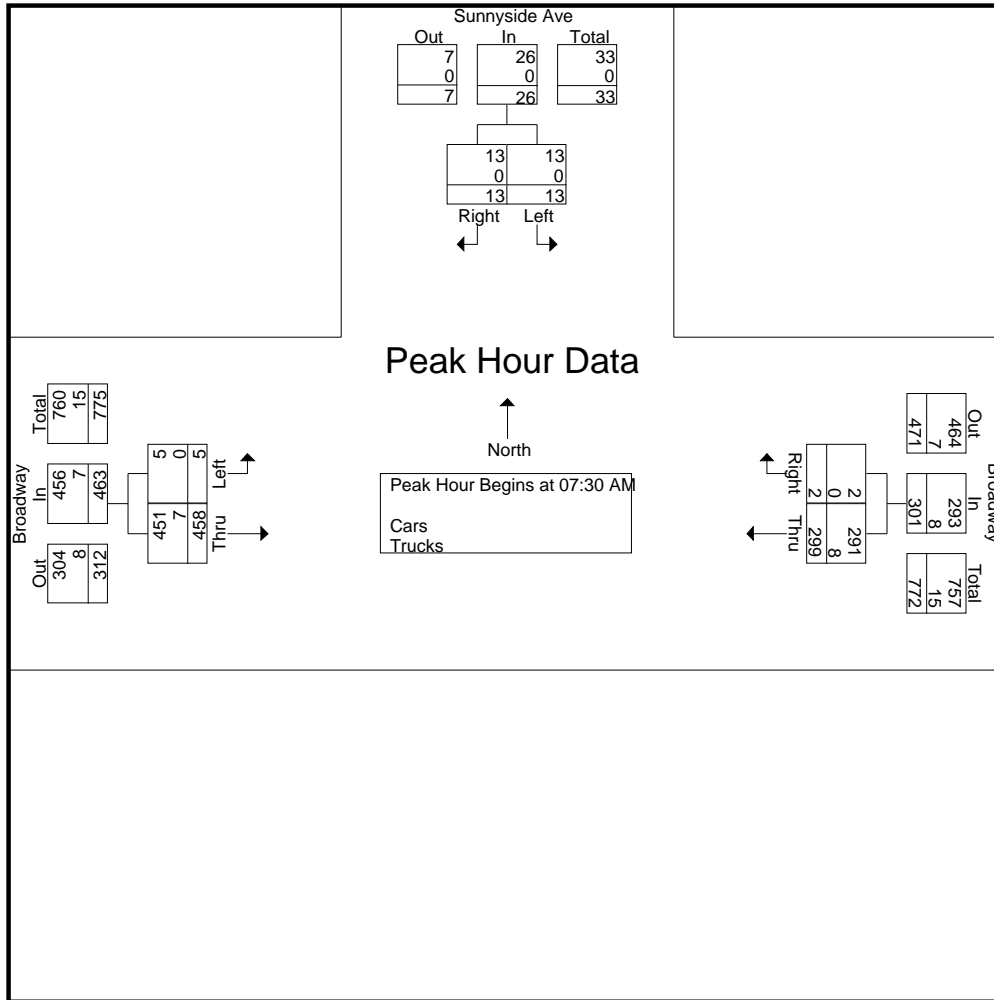
	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	2	7	34	1	3	71	118
07:15 AM	1	5	55	0	2	89	152
07:30 AM	2	5	79	1	3	118	208
07:45 AM	5	1	84	1	1	120	212
Total	10	18	252	3	9	398	690
08:00 AM	4	1	68	0	1	109	183
08:15 AM	2	6	68	0	0	111	187
08:30 AM	3	6	77	1	2	96	185
08:45 AM	2	1	56	0	1	123	183
Total	11	14	269	1	4	439	738
Grand Total	21	32	521	4	13	837	1428
Apprch %	39.6	60.4	99.2	0.8	1.5	98.5	
Total %	1.5	2.2	36.5	0.3	0.9	58.6	
Cars	21	32	505	4	12	822	1396
% Cars	100	100	96.9	100	92.3	98.2	97.8
Trucks	0	0	16	0	1	15	32
% Trucks	0	0	3.1	0	7.7	1.8	2.2

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	2	5	7	79	1	80	3	118	121	208
07:45 AM	5	1	6	84	1	85	1	120	121	212
08:00 AM	4	1	5	68	0	68	1	109	110	183
08:15 AM	2	6	8	68	0	68	0	111	111	187
Total Volume	13	13	26	299	2	301	5	458	463	790
% App. Total	50	50		99.3	0.7		1.1	98.9		
PHF	.650	.542	.813	.890	.500	.885	.417	.954	.957	.932
Cars	13	13	26	291	2	293	5	451	456	775
% Cars	100	100	100	97.3	100	97.3	100	98.5	98.5	98.1
Trucks	0	0	0	8	0	8	0	7	7	15
% Trucks	0	0	0	2.7	0	2.7	0	1.5	1.5	1.9

Accurate Counts
978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 2

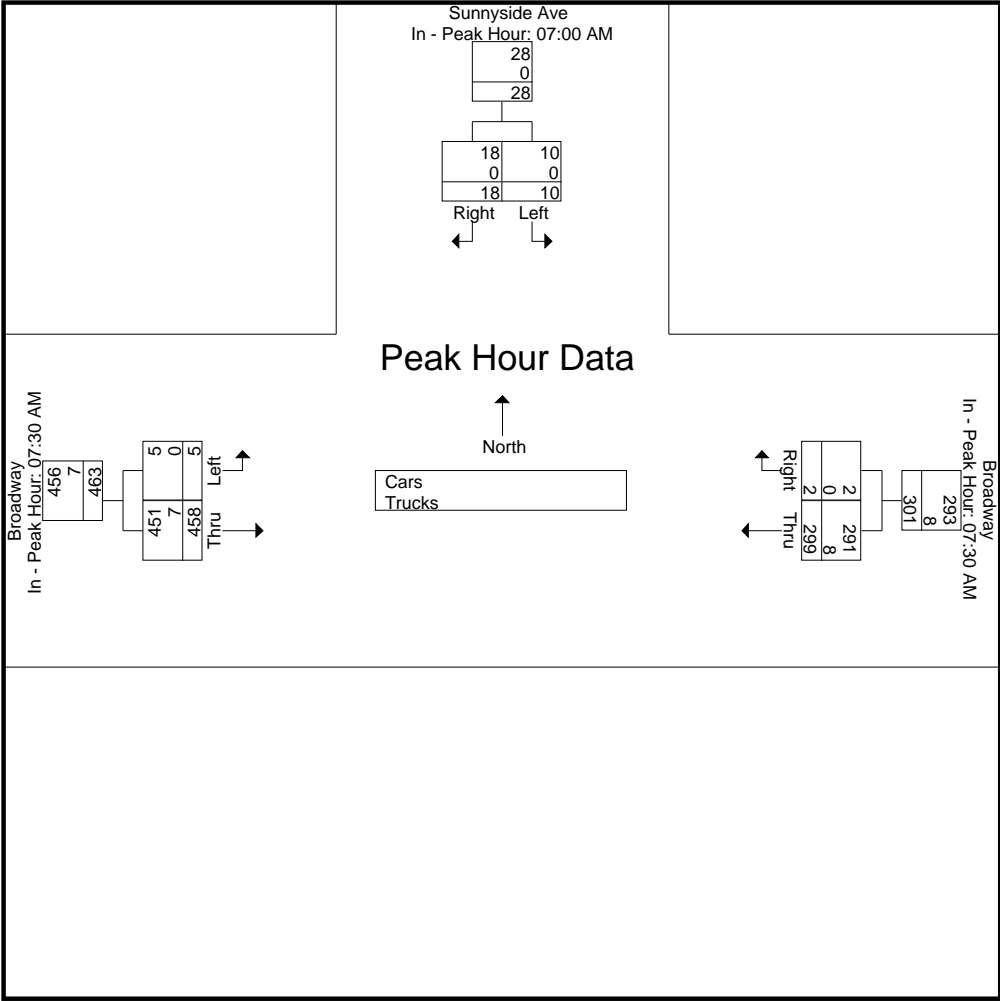


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:30 AM			07:30 AM		
+0 mins.	2	7	9	79	1	80	3	118	121
+15 mins.	1	5	6	84	1	85	1	120	121
+30 mins.	2	5	7	68	0	68	1	109	110
+45 mins.	5	1	6	68	0	68	0	111	111
Total Volume	10	18	28	299	2	301	5	458	463
% App. Total	35.7	64.3		99.3	0.7		1.1	98.9	
PHF	.500	.643	.778	.890	.500	.885	.417	.954	.957
Cars	10	18	28	291	2	293	5	451	456
% Cars	100	100	100	97.3	100	97.3	100	98.5	98.5
Trucks	0	0	0	8	0	8	0	7	7
% Trucks	0	0	0	2.7	0	2.7	0	1.5	1.5

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 3



Accurate Counts
978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 4

Groups Printed- Cars

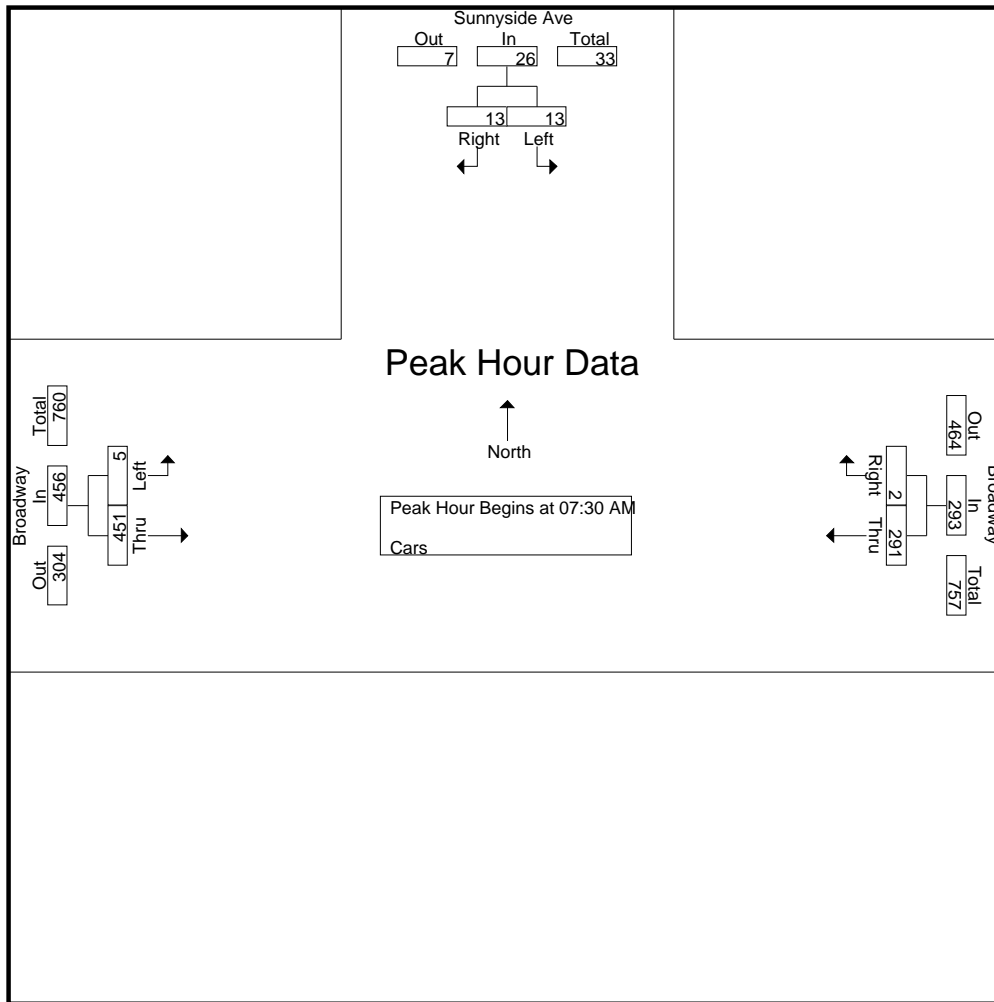
	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	2	7	34	1	3	70	117
07:15 AM	1	5	51	0	1	88	146
07:30 AM	2	5	78	1	3	118	207
07:45 AM	5	1	82	1	1	118	208
Total	10	18	245	3	8	394	678
08:00 AM	4	1	65	0	1	107	178
08:15 AM	2	6	66	0	0	108	182
08:30 AM	3	6	75	1	2	92	179
08:45 AM	2	1	54	0	1	121	179
Total	11	14	260	1	4	428	718
Grand Total	21	32	505	4	12	822	1396
Apprch %	39.6	60.4	99.2	0.8	1.4	98.6	
Total %	1.5	2.3	36.2	0.3	0.9	58.9	

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	2	5	7	78	1	79	3	118	121	207
07:45 AM	5	1	6	82	1	83	1	118	119	208
08:00 AM	4	1	5	65	0	65	1	107	108	178
08:15 AM	2	6	8	66	0	66	0	108	108	182
Total Volume	13	13	26	291	2	293	5	451	456	775
% App. Total	50	50		99.3	0.7		1.1	98.9		
PHF	.650	.542	.813	.887	.500	.883	.417	.956	.942	.931

Accurate Counts
978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 5

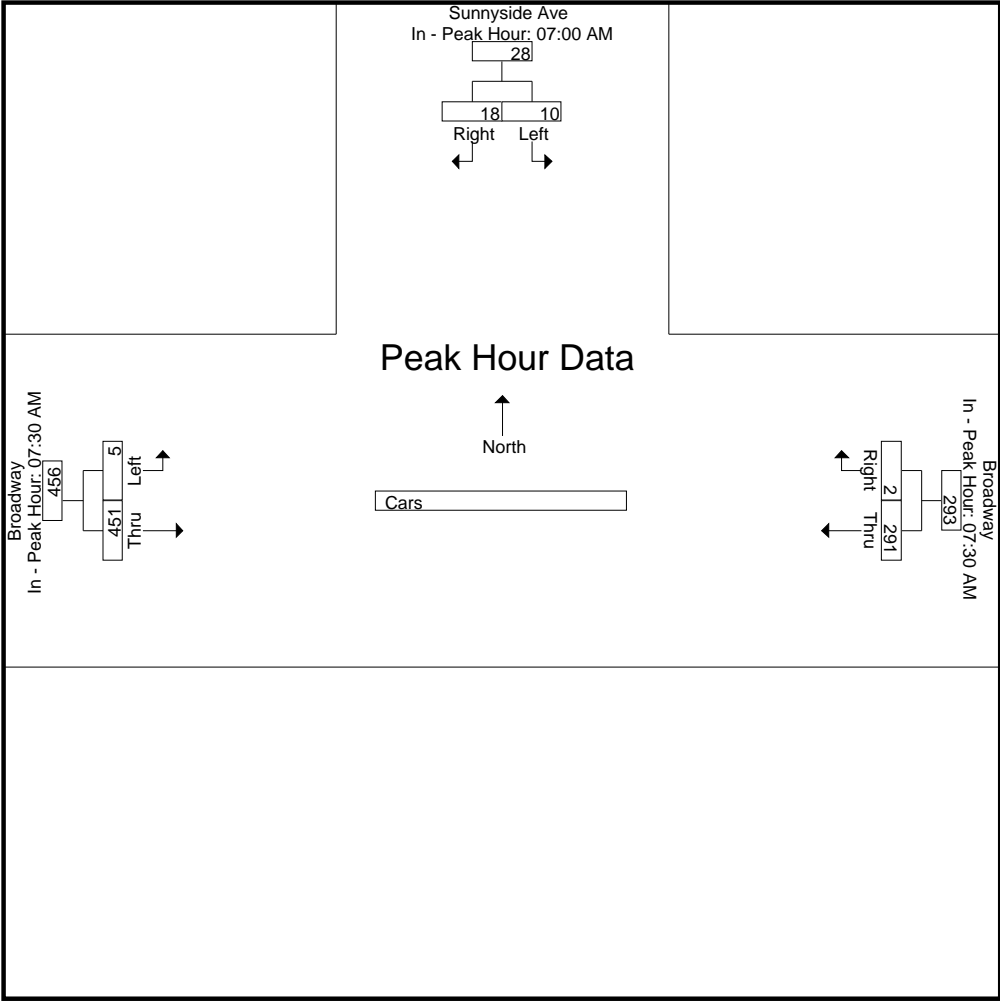


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:00 AM			07:30 AM			07:30 AM		
+0 mins.	2	7	9	78	1	79	3	118	121
+15 mins.	1	5	6	82	1	83	1	118	119
+30 mins.	2	5	7	65	0	65	1	107	108
+45 mins.	5	1	6	66	0	66	0	108	108
Total Volume	10	18	28	291	2	293	5	451	456
% App. Total	35.7	64.3		99.3	0.7		1.1	98.9	
PHF	.500	.643	.778	.887	.500	.883	.417	.956	.942

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 6



Accurate Counts
978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 7

Groups Printed- Trucks

	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
07:00 AM	0	0	0	0	0	1	1
07:15 AM	0	0	4	0	1	1	6
07:30 AM	0	0	1	0	0	0	1
07:45 AM	0	0	2	0	0	2	4
Total	0	0	7	0	1	4	12
08:00 AM	0	0	3	0	0	2	5
08:15 AM	0	0	2	0	0	3	5
08:30 AM	0	0	2	0	0	4	6
08:45 AM	0	0	2	0	0	2	4
Total	0	0	9	0	0	11	20
Grand Total	0	0	16	0	1	15	32
Apprch %	0	0	100	0	6.2	93.8	
Total %	0	0	50	0	3.1	46.9	

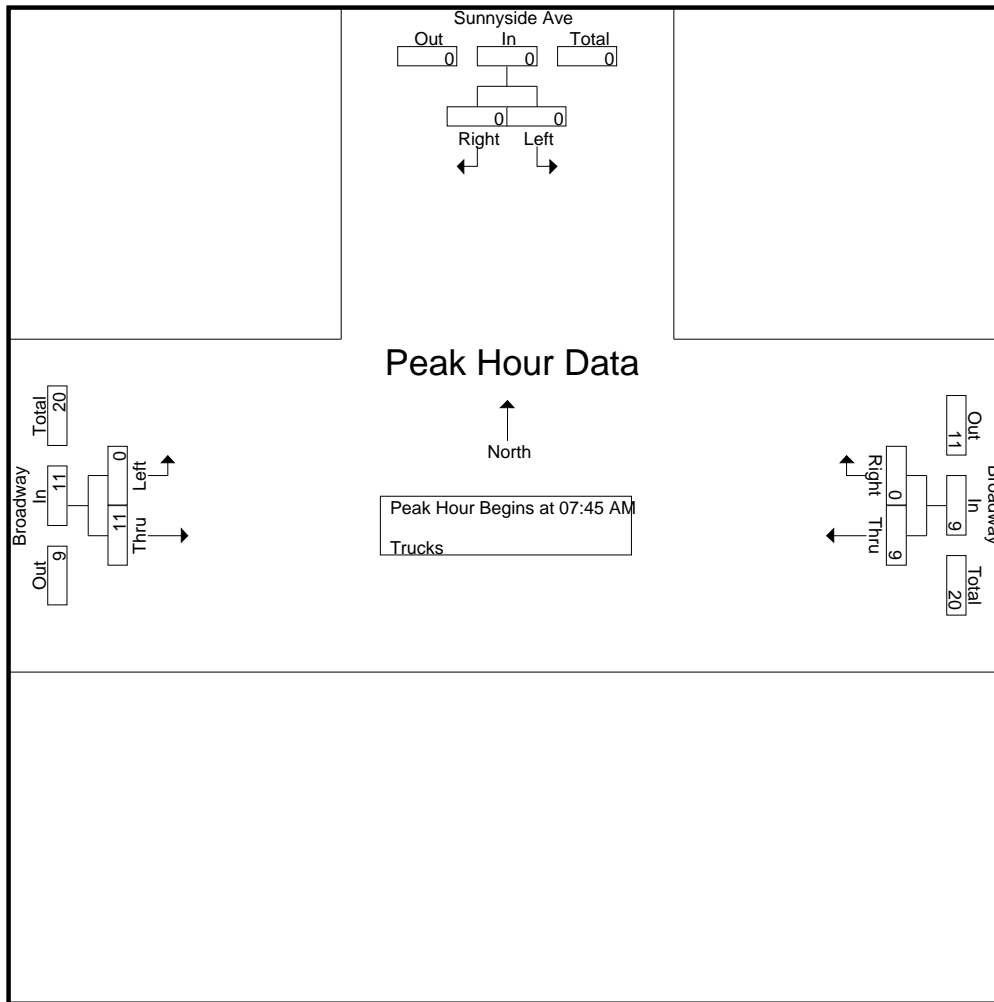
	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:45 AM										
07:45 AM	0	0	0	2	0	2	0	2	2	4
08:00 AM	0	0	0	3	0	3	0	2	2	5
08:15 AM	0	0	0	2	0	2	0	3	3	5
08:30 AM	0	0	0	2	0	2	0	4	4	6
Total Volume	0	0	0	9	0	9	0	11	11	20
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.750	.000	.750	.000	.688	.688	.833

Accurate Counts

978-664-2565

N/S Street : Sunnyside Avenue
 E/W Street : Broadway
 City/State : Arlington, MA
 Weather : Clear

File Name : 15289002
 Site Code : 15289002
 Start Date : 11/3/2022
 Page No : 8

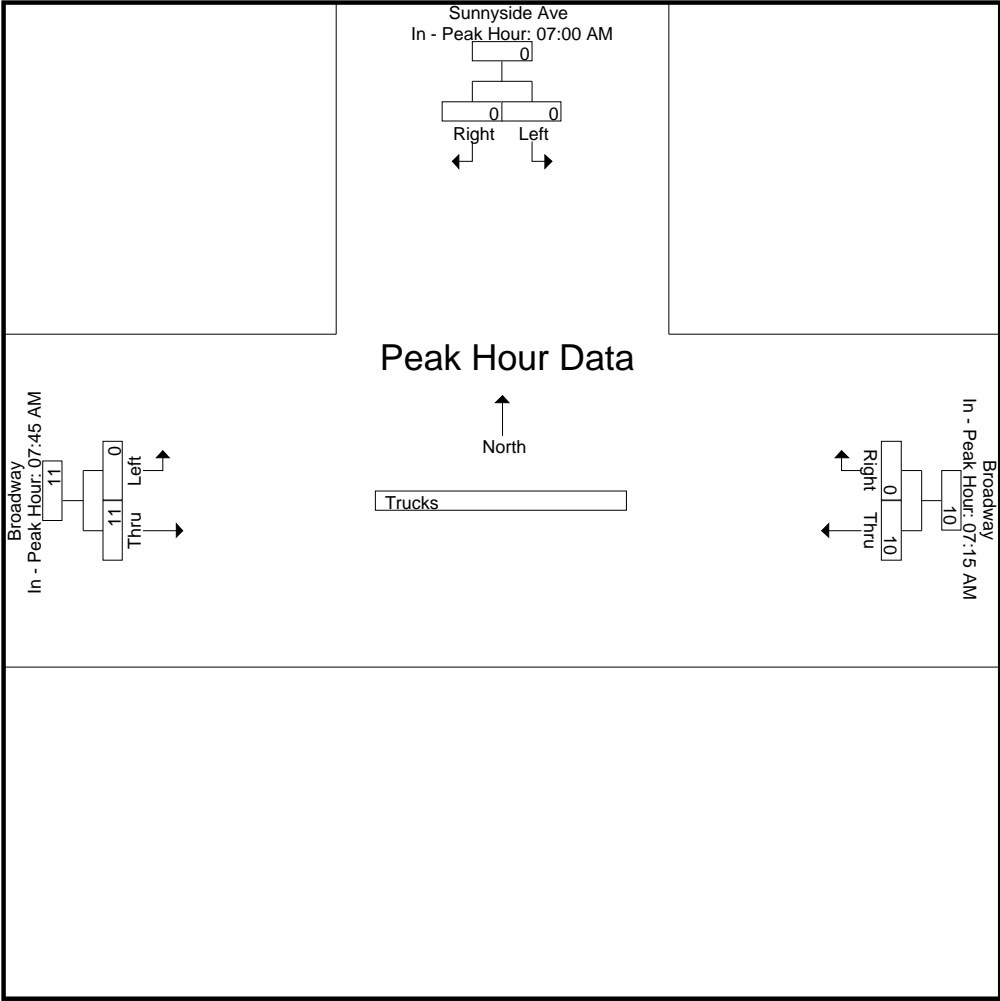


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	07:00 AM			07:15 AM			07:45 AM		
+0 mins.	0	0	0	4	0	4	0	2	2
+15 mins.	0	0	0	1	0	1	0	2	2
+30 mins.	0	0	0	2	0	2	0	3	3
+45 mins.	0	0	0	3	0	3	0	4	4
Total Volume	0	0	0	10	0	10	0	11	11
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.625	.000	.625	.000	.688	.688

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 9



Accurate Counts

978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 10

Groups Printed- Bikes Peds

	Sunnyside Ave From North			Broadway From East			Broadway From West			Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
07:00 AM	0	0	1	1	1	3	0	1	0	4	3	7
07:15 AM	0	0	4	1	0	0	0	0	0	4	1	5
07:30 AM	2	0	1	1	0	0	0	4	0	1	7	8
07:45 AM	1	0	2	3	0	0	0	6	2	4	10	14
Total	3	0	8	6	1	3	0	11	2	13	21	34
08:00 AM	0	0	4	1	0	1	1	5	0	5	7	12
08:15 AM	0	0	4	3	0	2	0	2	1	7	5	12
08:30 AM	0	0	2	0	0	1	0	0	0	3	0	3
08:45 AM	0	0	5	3	0	1	0	4	0	6	7	13
Total	0	0	15	7	0	5	1	11	1	21	19	40
Grand Total	3	0	23	13	1	8	1	22	3	34	40	74
Apprch %	100	0		92.9	7.1		4.3	95.7				
Total %	7.5	0		32.5	2.5		2.5	55		45.9	54.1	

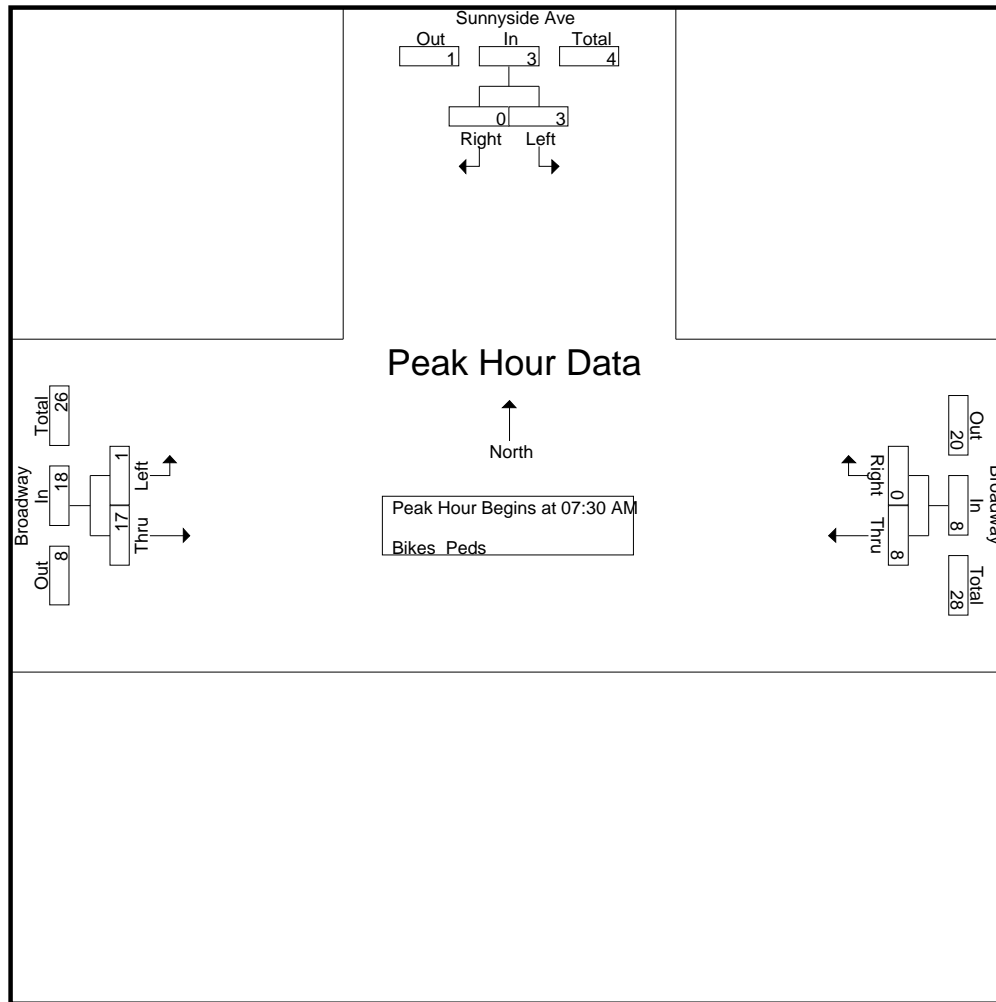
	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:30 AM										
07:30 AM	2	0	2	1	0	1	0	4	4	7
07:45 AM	1	0	1	3	0	3	0	6	6	10
08:00 AM	0	0	0	1	0	1	1	5	6	7
08:15 AM	0	0	0	3	0	3	0	2	2	5
Total Volume	3	0	3	8	0	8	1	17	18	29
% App. Total	100	0		100	0		5.6	94.4		
PHF	.375	.000	.375	.667	.000	.667	.250	.708	.750	.725

Accurate Counts

978-664-2565

N/S Street : Sunnyside Avenue
 E/W Street : Broadway
 City/State : Arlington, MA
 Weather : Clear

File Name : 15289002
 Site Code : 15289002
 Start Date : 11/3/2022
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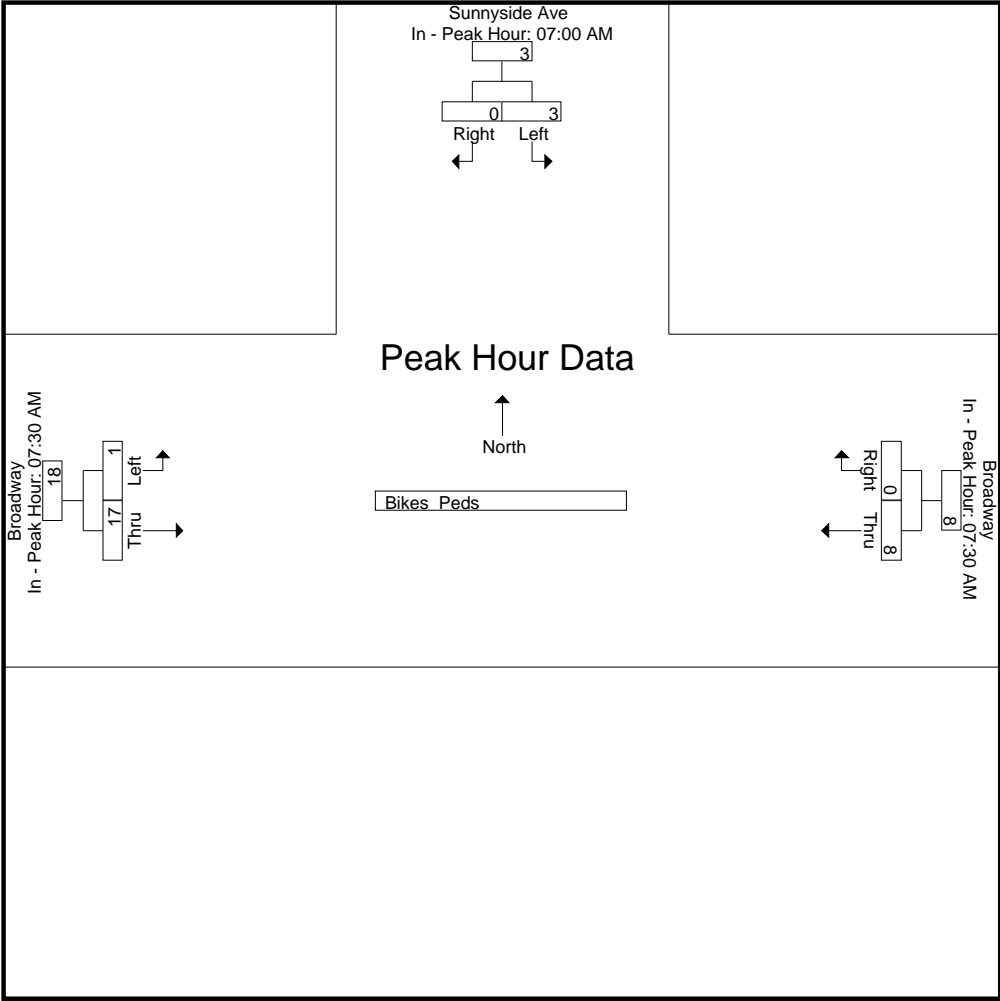


Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	07:00 AM			07:30 AM			07:30 AM		
+0 mins.	0	0	0	1	0	1	0	4	4
+15 mins.	0	0	0	3	0	3	0	6	6
+30 mins.	2	0	2	1	0	1	1	5	6
+45 mins.	1	0	1	3	0	3	0	2	2
Total Volume	3	0	3	8	0	8	1	17	18
% App. Total	100	0		100	0		5.6	94.4	
PHF	.375	.000	.375	.667	.000	.667	.250	.708	.750

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
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Start Date : 11/3/2022
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Accurate Counts

978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 1

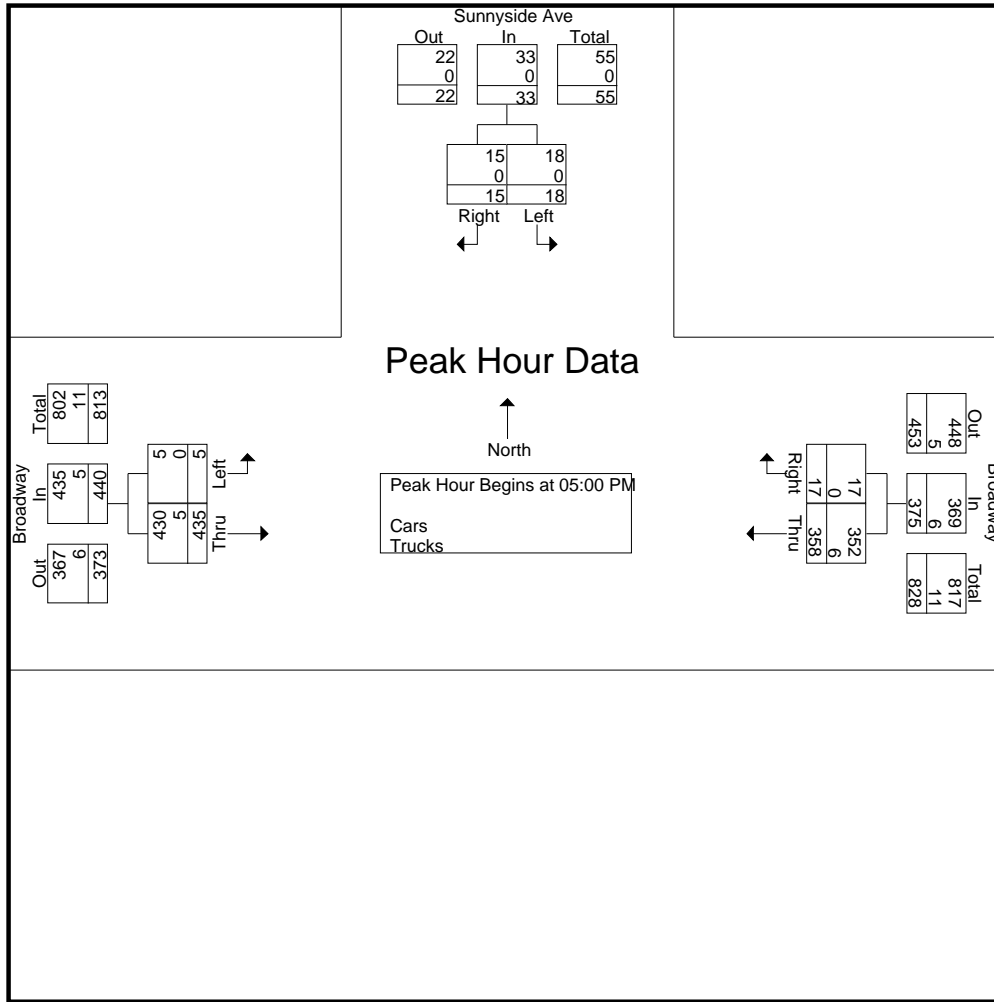
Groups Printed- Cars - Trucks

	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	1	2	71	1	1	95	171
04:15 PM	7	3	57	4	8	94	173
04:30 PM	2	5	84	2	5	106	204
04:45 PM	4	3	69	6	1	108	191
Total	14	13	281	13	15	403	739
05:00 PM	8	1	86	2	1	98	196
05:15 PM	4	6	81	5	0	125	221
05:30 PM	3	4	89	7	3	115	221
05:45 PM	3	4	102	3	1	97	210
Total	18	15	358	17	5	435	848
Grand Total	32	28	639	30	20	838	1587
Apprch %	53.3	46.7	95.5	4.5	2.3	97.7	
Total %	2	1.8	40.3	1.9	1.3	52.8	
Cars	32	28	627	30	20	828	1565
% Cars	100	100	98.1	100	100	98.8	98.6
Trucks	0	0	12	0	0	10	22
% Trucks	0	0	1.9	0	0	1.2	1.4

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	8	1	9	86	2	88	1	98	99	196
05:15 PM	4	6	10	81	5	86	0	125	125	221
05:30 PM	3	4	7	89	7	96	3	115	118	221
05:45 PM	3	4	7	102	3	105	1	97	98	210
Total Volume	18	15	33	358	17	375	5	435	440	848
% App. Total	54.5	45.5		95.5	4.5		1.1	98.9		
PHF	.563	.625	.825	.877	.607	.893	.417	.870	.880	.959
Cars	18	15	33	352	17	369	5	430	435	837
% Cars	100	100	100	98.3	100	98.4	100	98.9	98.9	98.7
Trucks	0	0	0	6	0	6	0	5	5	11
% Trucks	0	0	0	1.7	0	1.6	0	1.1	1.1	1.3

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 2

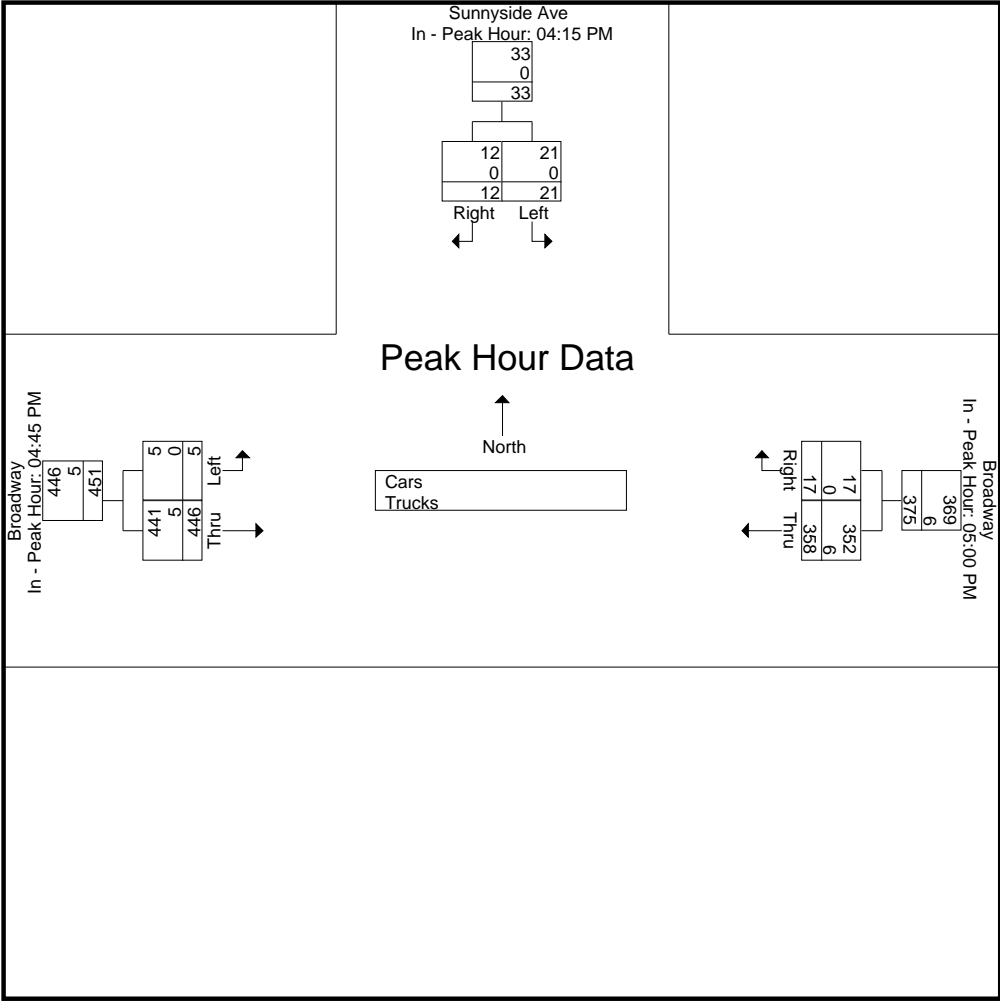


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:15 PM			05:00 PM			04:45 PM		
+0 mins.	7	3	10	86	2	88	1	108	109
+15 mins.	2	5	7	81	5	86	1	98	99
+30 mins.	4	3	7	89	7	96	0	125	125
+45 mins.	8	1	9	102	3	105	3	115	118
Total Volume	21	12	33	358	17	375	5	446	451
% App. Total	63.6	36.4		95.5	4.5		1.1	98.9	
PHF	.656	.600	.825	.877	.607	.893	.417	.892	.902
Cars	21	12	33	352	17	369	5	441	446
% Cars	100	100	100	98.3	100	98.4	100	98.9	98.9
Trucks	0	0	0	6	0	6	0	5	5
% Trucks	0	0	0	1.7	0	1.6	0	1.1	1.1

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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Accurate Counts
978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 4

Groups Printed- Cars

	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	1	2	69	1	1	94	168
04:15 PM	7	3	56	4	8	93	171
04:30 PM	2	5	82	2	5	103	199
04:45 PM	4	3	68	6	1	108	190
Total	14	13	275	13	15	398	728
05:00 PM	8	1	84	2	1	96	192
05:15 PM	4	6	80	5	0	123	218
05:30 PM	3	4	88	7	3	114	219
05:45 PM	3	4	100	3	1	97	208
Total	18	15	352	17	5	430	837
Grand Total	32	28	627	30	20	828	1565
Apprch %	53.3	46.7	95.4	4.6	2.4	97.6	
Total %	2	1.8	40.1	1.9	1.3	52.9	

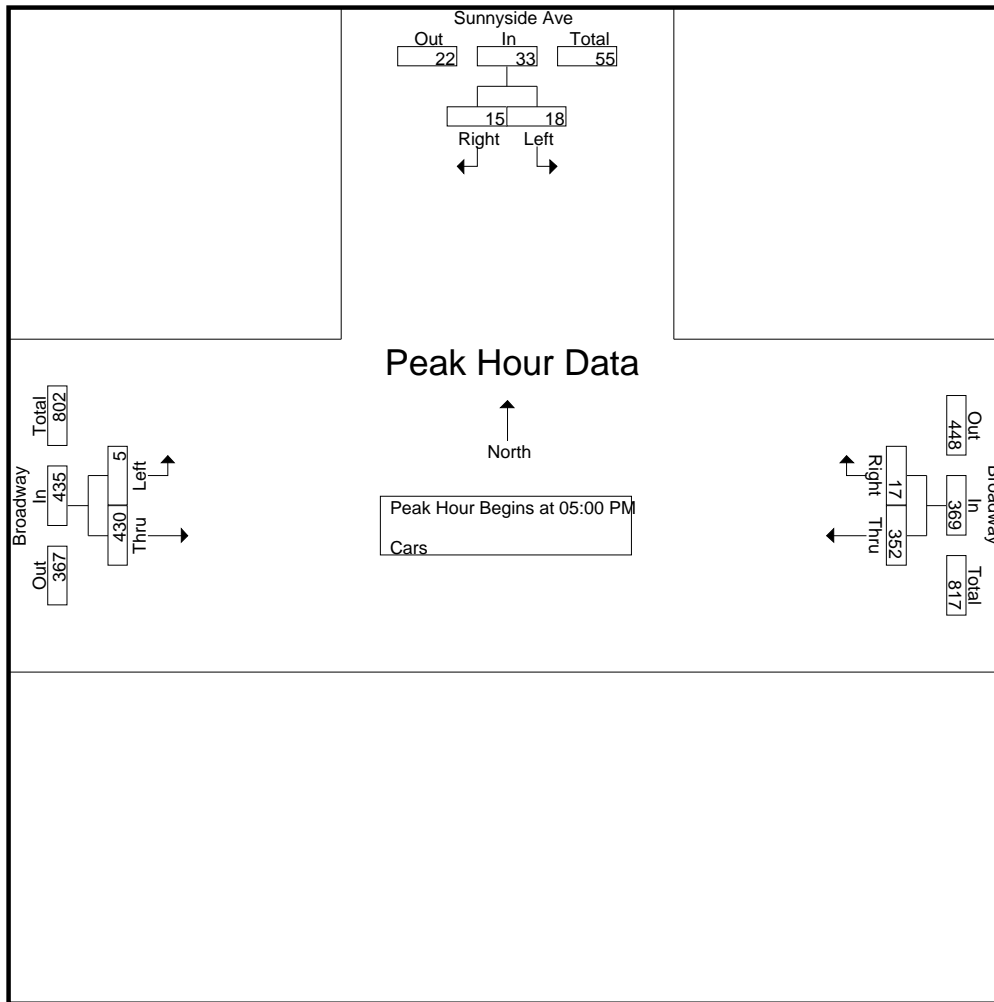
	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 05:00 PM										
05:00 PM	8	1	9	84	2	86	1	96	97	192
05:15 PM	4	6	10	80	5	85	0	123	123	218
05:30 PM	3	4	7	88	7	95	3	114	117	219
05:45 PM	3	4	7	100	3	103	1	97	98	208
Total Volume	18	15	33	352	17	369	5	430	435	837
% App. Total	54.5	45.5		95.4	4.6		1.1	98.9		
PHF	.563	.625	.825	.880	.607	.896	.417	.874	.884	.955

Accurate Counts

978-664-2565

N/S Street : Sunnyside Avenue
 E/W Street : Broadway
 City/State : Arlington, MA
 Weather : Clear

File Name : 15289002
 Site Code : 15289002
 Start Date : 11/3/2022
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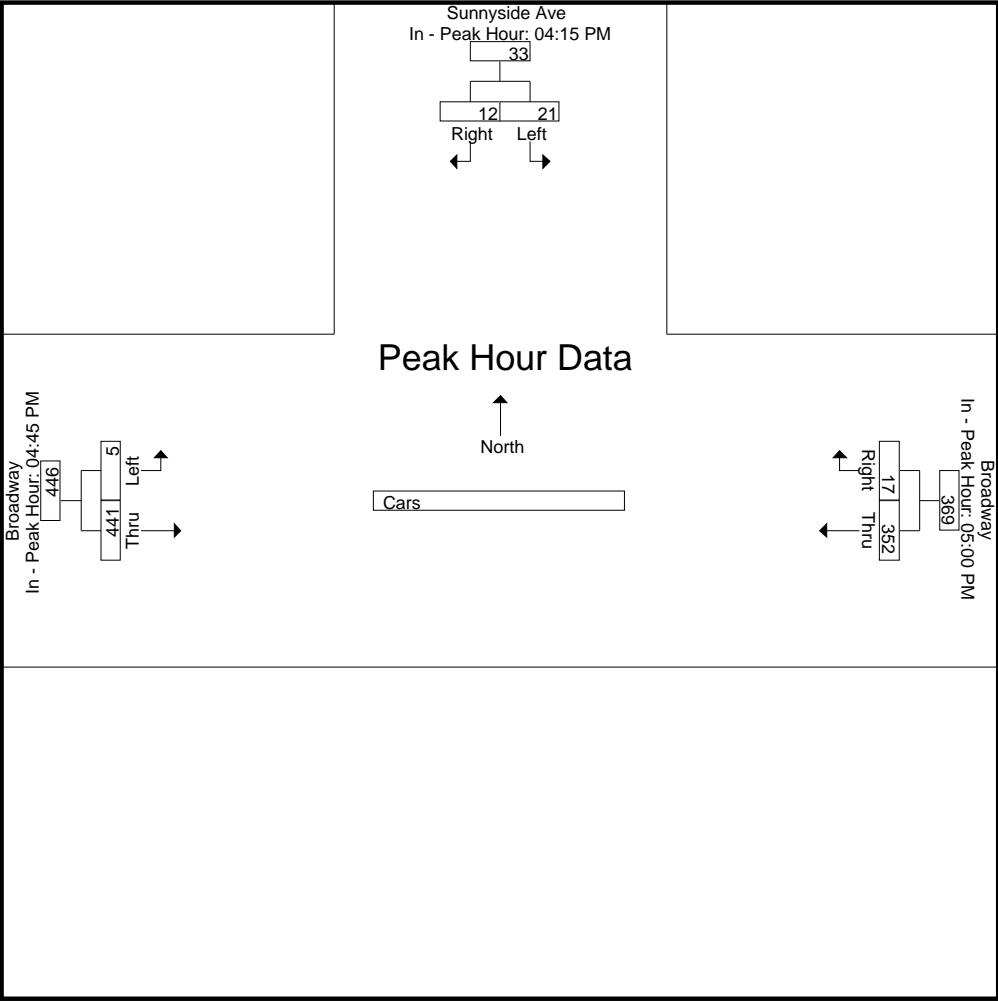


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:15 PM			05:00 PM			04:45 PM		
+0 mins.	7	3	10	84	2	86	1	108	109
+15 mins.	2	5	7	80	5	85	1	96	97
+30 mins.	4	3	7	88	7	95	0	123	123
+45 mins.	8	1	9	100	3	103	3	114	117
Total Volume	21	12	33	352	17	369	5	441	446
% App. Total	63.6	36.4		95.4	4.6		1.1	98.9	
PHF	.656	.600	.825	.880	.607	.896	.417	.896	.907

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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Accurate Counts
978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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Groups Printed- Trucks

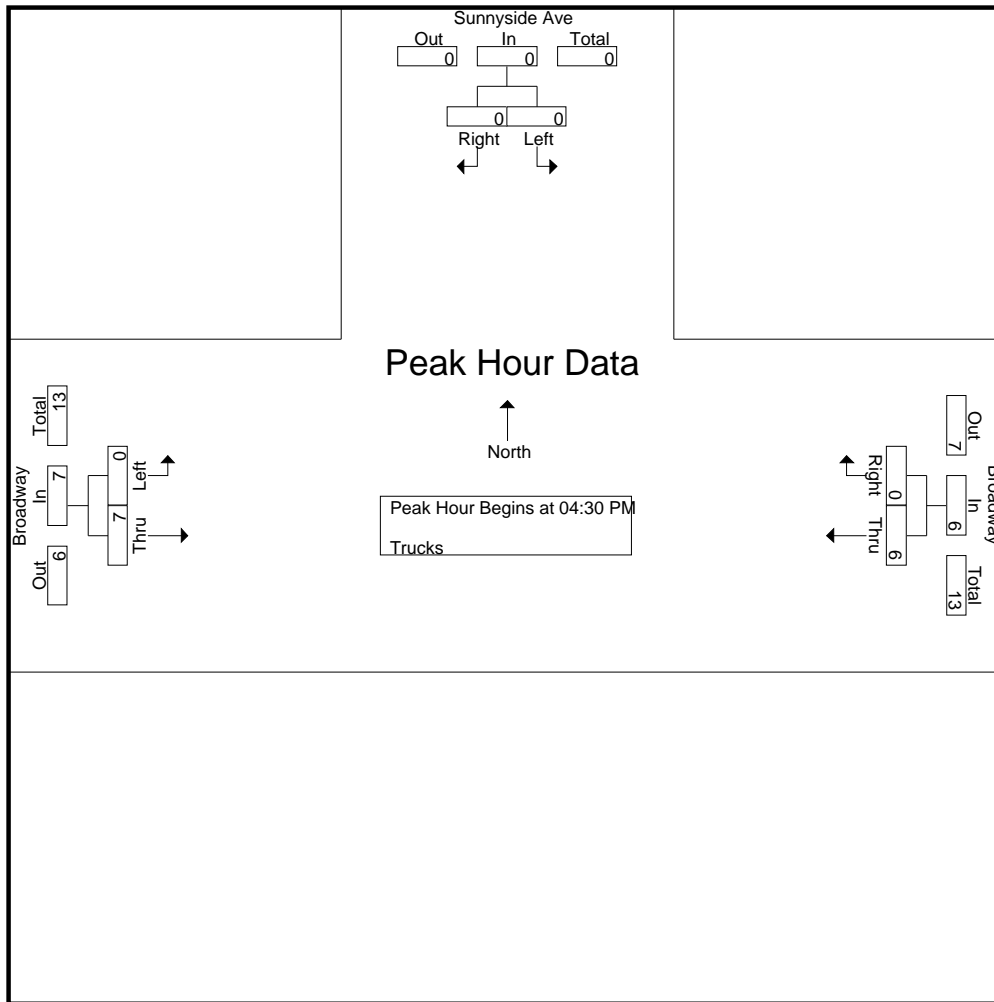
	Sunnyside Ave From North		Broadway From East		Broadway From West		
Start Time	Left	Right	Thru	Right	Left	Thru	Int. Total
04:00 PM	0	0	2	0	0	1	3
04:15 PM	0	0	1	0	0	1	2
04:30 PM	0	0	2	0	0	3	5
04:45 PM	0	0	1	0	0	0	1
Total	0	0	6	0	0	5	11
05:00 PM	0	0	2	0	0	2	4
05:15 PM	0	0	1	0	0	2	3
05:30 PM	0	0	1	0	0	1	2
05:45 PM	0	0	2	0	0	0	2
Total	0	0	6	0	0	5	11
Grand Total	0	0	12	0	0	10	22
Apprch %	0	0	100	0	0	100	
Total %	0	0	54.5	0	0	45.5	

	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:30 PM										
04:30 PM	0	0	0	2	0	2	0	3	3	5
04:45 PM	0	0	0	1	0	1	0	0	0	1
05:00 PM	0	0	0	2	0	2	0	2	2	4
05:15 PM	0	0	0	1	0	1	0	2	2	3
Total Volume	0	0	0	6	0	6	0	7	7	13
% App. Total	0	0		100	0		0	100		
PHF	.000	.000	.000	.750	.000	.750	.000	.583	.583	.650

Accurate Counts
978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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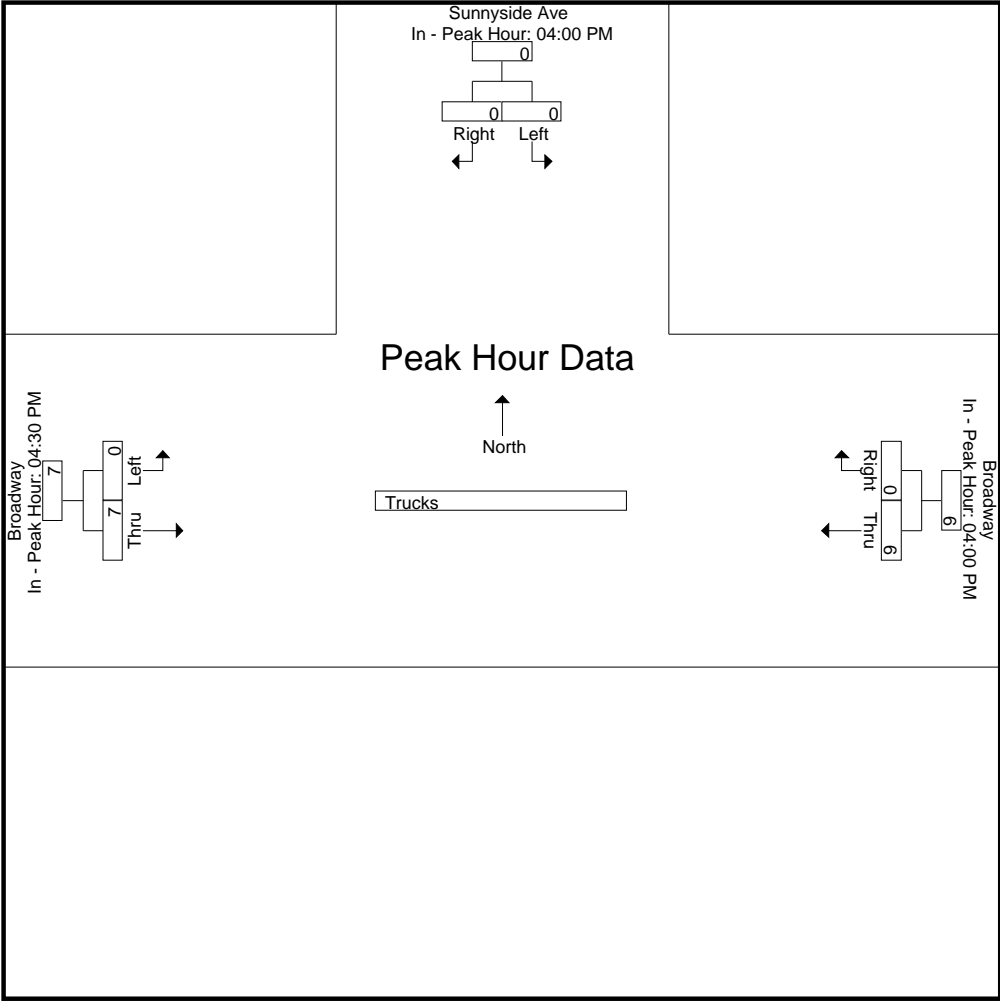


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:30 PM		
+0 mins.	0	0	0	2	0	2	0	3	3
+15 mins.	0	0	0	1	0	1	0	0	0
+30 mins.	0	0	0	2	0	2	0	2	2
+45 mins.	0	0	0	1	0	1	0	2	2
Total Volume	0	0	0	6	0	6	0	7	7
% App. Total	0	0		100	0		0	100	
PHF	.000	.000	.000	.750	.000	.750	.000	.583	.583

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
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Accurate Counts

978-664-2565

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 10

Groups Printed- Bikes Peds

	Sunnyside Ave From North			Broadway From East			Broadway From West			Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Right	Peds	Thru	Right	Peds	Left	Thru	Peds			
04:00 PM	0	0	10	4	0	2	1	3	0	12	8	20
04:15 PM	0	0	12	3	0	0	0	2	0	12	5	17
04:30 PM	0	0	9	4	0	0	0	3	3	12	7	19
04:45 PM	0	0	9	3	0	1	0	2	0	10	5	15
Total	0	0	40	14	0	3	1	10	3	46	25	71
05:00 PM	0	0	5	1	0	0	0	6	0	5	7	12
05:15 PM	0	0	3	4	0	1	0	2	0	4	6	10
05:30 PM	0	0	4	1	0	3	1	3	0	7	5	12
05:45 PM	0	0	8	2	0	0	0	1	0	8	3	11
Total	0	0	20	8	0	4	1	12	0	24	21	45
Grand Total	0	0	60	22	0	7	2	22	3	70	46	116
Apprch %	0	0		100	0		8.3	91.7				
Total %	0	0		47.8	0		4.3	47.8		60.3	39.7	

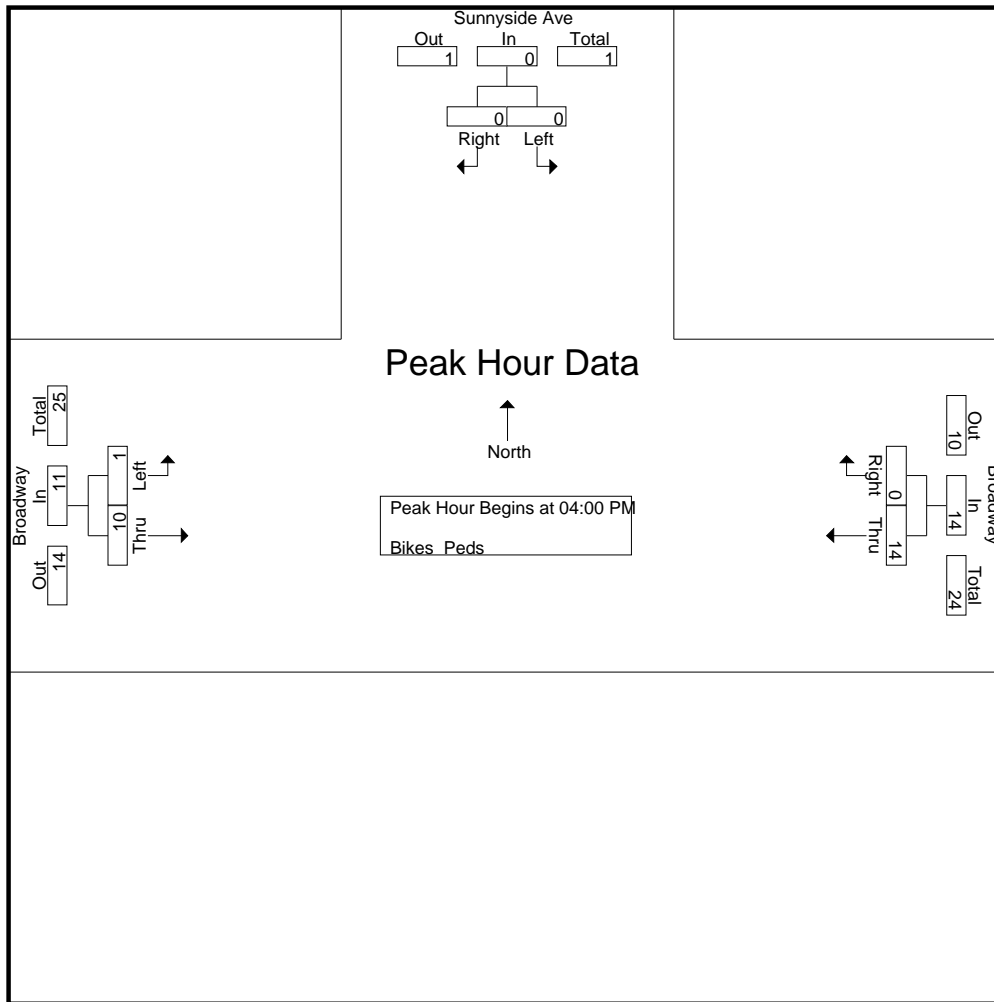
	Sunnyside Ave From North			Broadway From East			Broadway From West			
Start Time	Left	Right	App. Total	Thru	Right	App. Total	Left	Thru	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:00 PM										
04:00 PM	0	0	0	4	0	4	1	3	4	8
04:15 PM	0	0	0	3	0	3	0	2	2	5
04:30 PM	0	0	0	4	0	4	0	3	3	7
04:45 PM	0	0	0	3	0	3	0	2	2	5
Total Volume	0	0	0	14	0	14	1	10	11	25
% App. Total	0	0		100	0		9.1	90.9		
PHF	.000	.000	.000	.875	.000	.875	.250	.833	.688	.781

Accurate Counts

978-664-2565

N/S Street : Sunnyside Avenue
 E/W Street : Broadway
 City/State : Arlington, MA
 Weather : Clear

File Name : 15289002
 Site Code : 15289002
 Start Date : 11/3/2022
 Page No : 11

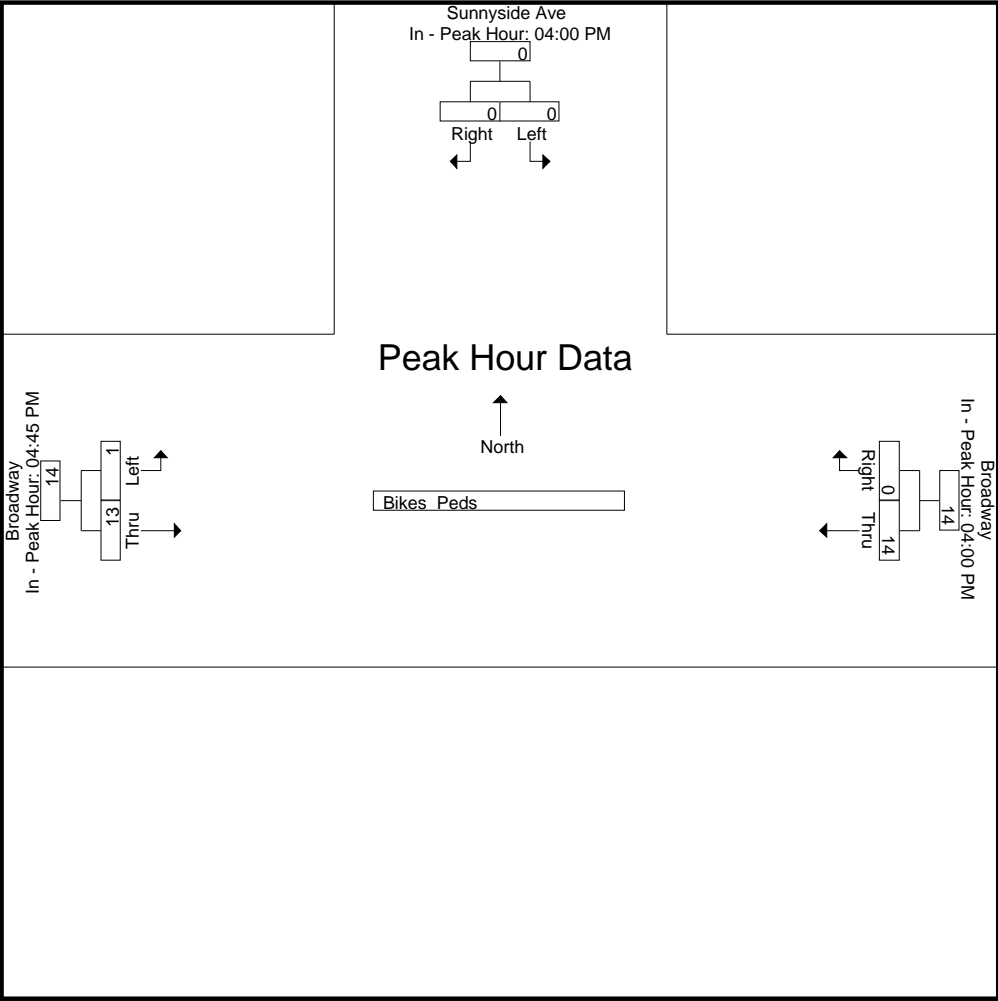


Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
 Peak Hour for Each Approach Begins at:

	04:00 PM			04:00 PM			04:45 PM		
+0 mins.	0	0	0	4	0	4	0	2	2
+15 mins.	0	0	0	3	0	3	0	6	6
+30 mins.	0	0	0	4	0	4	0	2	2
+45 mins.	0	0	0	3	0	3	1	3	4
Total Volume	0	0	0	14	0	14	1	13	14
% App. Total	0	0		100	0		7.1	92.9	
PHF	.000	.000	.000	.875	.000	.875	.250	.542	.583

N/S Street : Sunnyside Avenue
E/W Street : Broadway
City/State : Arlington, MA
Weather : Clear

File Name : 15289002
Site Code : 15289002
Start Date : 11/3/2022
Page No : 12





Appendix B: MassDOT’s 2019 Weekday Seasonal Adjustment Factors

Massachusetts Highway Department
Statewide Traffic Data Collection
2019 Weekday Seasonal Factors

Factor Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Axle Factor
R1	1.22	1.14	1.12	1.06	1.00	0.96	0.87	0.85	0.96	0.99	1.04	1.12	0.85
R2	0.95	0.96	0.98	0.97	0.97	0.93	0.97	0.94	0.96	0.90	0.92	0.93	0.96
R3	1.15	1.06	1.07	1.00	0.89	0.88	0.89	0.89	0.95	0.92	1.02	1.01	0.97
R4-R7	1.09	1.09	1.11	1.02	0.96	0.92	0.89	0.89	0.99	0.98	1.09	1.13	0.98
U1-Boston	1.03	1.01	0.98	0.94	0.94	0.92	0.95	0.93	0.94	0.94	0.97	1.04	0.96
U1-Essex	1.09	1.06	1.03	0.99	0.94	0.90	0.88	0.86	0.93	0.94	0.99	1.06	0.93
U1-Southeast	1.06	1.05	1.01	0.97	0.95	0.93	0.93	0.90	0.94	0.94	0.98	1.04	0.98
U1-West	1.19	1.14	1.09	0.95	0.92	0.89	0.89	0.86	0.91	0.95	0.97	1.07	0.84
U1-Worcester	1.02	1.04	0.97	0.94	0.93	0.91	0.95	0.91	0.93	0.92	0.95	1.10	0.88
U2	1.01	1.00	0.94	0.93	0.91	0.89	0.93	0.90	0.90	0.91	0.94	1.02	0.99
U3	1.06	1.03	0.98	0.94	0.93	0.91	0.95	0.91	0.92	0.93	0.97	1.00	0.98
U4-U7	1.01	1.00	0.95	0.92	0.88	0.86	0.92	0.91	0.92	0.94	0.99	1.04	0.99
Rec - East	1.04	1.16	1.12	0.98	0.92	0.88	0.77	0.81	0.94	1.02	1.08	1.12	0.99
Rec - West	1.30	1.23	1.32	1.18	0.95	0.82	0.70	0.69	0.97	0.96	1.16	1.15	0.98

Round off:

0-999 = 10

>1000 = 100

U = Urban

R = Rural

1 - Interstate

2 - Freeway and Expressway

3 - Other Principal Arterial

4 - Minor Arterial

5 - Major Collector

6 - Minor Collector

7 - Local Road and Street

Recreational - East Group - Cape Cod (all towns) including the town of Plymouth south of Route 3A (stations 7014,7079,7080,7090,7091,7092,7093,7094,7095,7096,7097,7108 and 7178), Martha's Vineyard and Nantucket.

Recreational - West Group - Continuous Stations 2 and 189 including stations 1066,1067,1083,1084,1085,1086,1087,1088,1089,1090,1091,1092,1093,1094,1095,1096,1097,1098,1099,1100,1101,1102,1103,1104,1105,1106,1107,1108,1113,1114,1116,2196,2197 and 2198.



Appendix C: Crash Rate Worksheets

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : ARLINGTON/SOMERVILLE COUNT DATE : 11/3/2022

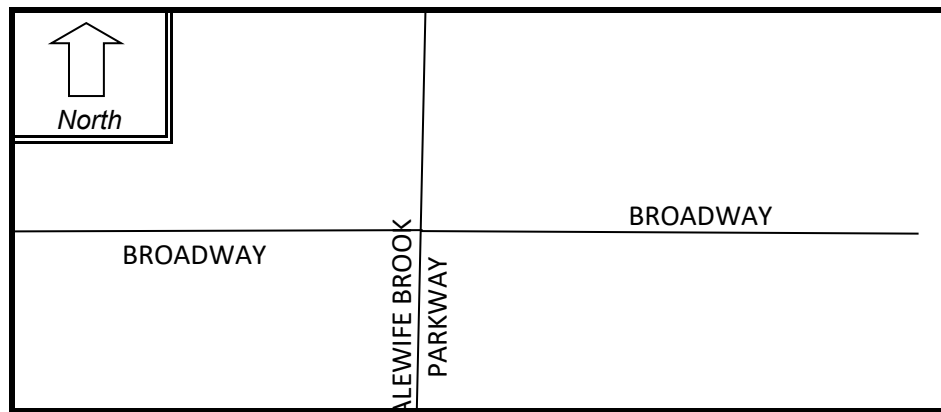
DISTRICT : 4 UNSIGNALIZED : ☐ SIGNALIZED : ☒

~ INTERSECTION DATA ~

MAJOR STREET : ALEWIFE BROOK PARKWAY

MINOR STREET(S) : BROADWAY

**INTERSECTION
DIAGRAM**



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	322	456	859	895		2,532

" K " FACTOR : INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

TOTAL # OF CRASHES : # OF YEARS : AVERAGE # OF CRASHES PER YEAR (A) :

CRASH RATE CALCULATION :

1.09

RATE =

$$\frac{(A * 1,000,000)}{(V * 365)}$$

Comments : PM Peak used

Project Title & Date: HCA 10 SUNNYSIDE AVENUE

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : ARLINGTON COUNT DATE : 11/3/2022

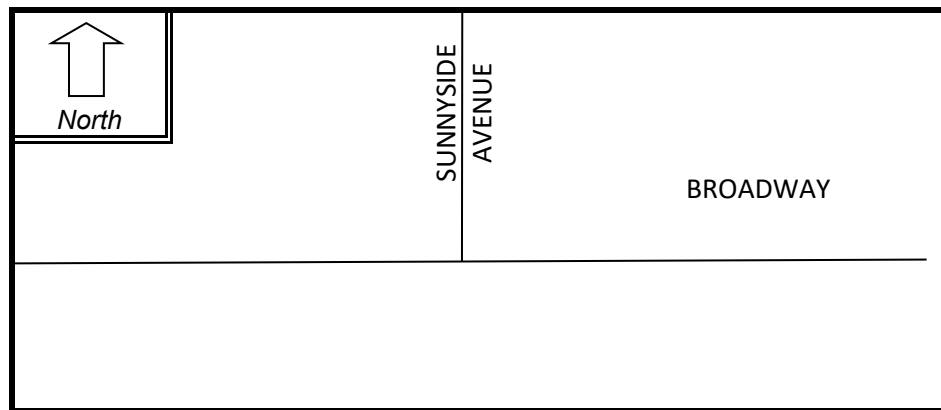
DISTRICT : 4 UNSIGNALIZED : ☒ SIGNALIZED : ☐

~ INTERSECTION DATA ~

MAJOR STREET : BROADWAY

MINOR STREET(S) : SUNNYSIDE AVENUE

INTERSECTION
DIAGRAM



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	EB	WB	NB	SB		
PEAK HOURLY VOLUMES (AM/PM) :	440	375		33		848

" K " FACTOR : INTERSECTION ADT (V) = TOTAL DAILY APPROACH VOLUME :

TOTAL # OF CRASHES : # OF YEARS : AVERAGE # OF CRASHES PER YEAR (A) :

CRASH RATE CALCULATION :

RATE =

$$\frac{(A * 1,000,000)}{(V * 365)}$$

Comments : PM Peak used

Project Title & Date: HCA 10 SUNNYSIDE AVENUE



















Appendix D: Capacity Analysis

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	161	11	132	224	48	20	974	77	17	359	74
Future Volume (vph)	112	161	11	132	224	48	20	974	77	17	359	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00			1.00	
Frt		0.992			0.983			0.987			0.976	
Flt Protected		0.982			0.983			0.999			0.998	
Satd. Flow (prot)	0	3227	0	0	3329	0	0	3302	0	0	3231	0
Flt Permitted		0.982			0.983			0.917			0.692	
Satd. Flow (perm)	0	3227	0	0	3329	0	0	3031	0	0	2240	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			9			9				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			32			4			1			2
Peak Hour Factor	0.82	0.74	0.55	0.72	0.77	0.80	0.56	0.86	0.69	0.71	0.80	0.84
Heavy Vehicles (%)	3%	6%	9%	0%	2%	0%	0%	0%	0%	6%	0%	3%
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	375	0	0	534	0	0	1281	0	0	561	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		2	2		6	6	

Existing AM Peak
Nitsch Engineering

Synchro 11 Report
Page 1

1: Alewife Brook Pkwy & Broadway













Lanes, Volumes, Timings

11/18/2022

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	

1: Alewife Brook Pkwy & Broadway
Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		18.9			20.0			50.0			50.0	
Actuated g/C Ratio		0.15			0.16			0.40			0.40	
v/c Ratio		0.77			1.00			1.06			0.63	
Control Delay		62.0			90.2			80.2			35.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		62.0			90.2			80.2			35.0	
LOS		E			F			F			D	
Approach Delay		62.0			90.2			80.2			35.0	
Approach LOS		E			F			F			D	
90th %ile Green (s)	24.8	24.8		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
70th %ile Green (s)	21.2	21.2		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
50th %ile Green (s)	18.9	18.9		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
30th %ile Green (s)	16.6	16.6		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
10th %ile Green (s)	13.5	13.5		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
Stops (vph)		264			349			915			355	
Fuel Used(gal)		6			12			28			8	
CO Emissions (g/hr)		407			819			1935			549	
NOx Emissions (g/hr)		79			159			376			107	
VOC Emissions (g/hr)		94			190			448			127	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		154			227			~601			191	
Queue Length 95th (ft)		166			#284			#737			233	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		643			536			1209			889	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings













11/18/2022

Lane Group	Ø9
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.58			1.00			1.06			0.63	

Intersection Summary

Area Type: Other

Cycle Length: 132

Actuated Cycle Length: 126

Natural Cycle: 110

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 70.4

Intersection LOS: E

Intersection Capacity Utilization 78.4%

ICU Level of Service D

Analysis Period (min) 15

90th %ile Actuated Cycle: 131.8

70th %ile Actuated Cycle: 128.2

50th %ile Actuated Cycle: 125.9

30th %ile Actuated Cycle: 123.6

10th %ile Actuated Cycle: 120.5






~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Alewife Brook Pkwy & Broadway

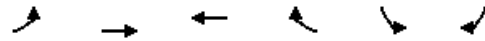
 Ø2	 Ø9	 Ø4	 Ø8
56 s	19 s	31 s	26 s
 Ø6			
56 s			

Lane Group	Ø9
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2: Broadway & Sunnyside Ave

HCM Unsignalized Intersection Capacity Analysis

11/18/2022



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	458	299	2	13	13
Future Volume (Veh/h)	5	458	299	2	13	13
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.95	0.89	0.50	0.65	0.54
Hourly flow rate (vph)	12	482	336	4	20	24
Pedestrians		19	19		19	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.86				0.86	0.86
vC, conflicting volume	359				882	376
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	167				778	187
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				93	97
cM capacity (veh/h)	1196				299	706
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	494	340	44			
Volume Left	12	0	20			
Volume Right	0	4	24			
cSH	1196	1700	436			
Volume to Capacity	0.01	0.20	0.10			
Queue Length 95th (ft)	1	0	8			
Control Delay (s)	0.3	0.0	14.2			
Lane LOS	A		B			
Approach Delay (s)	0.3	0.0	14.2			
Approach LOS			B			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			42.8%	ICU Level of Service		A
Analysis Period (min)			15			

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	250	16	175	256	25	4	776	103	19	729	147
Future Volume (vph)	119	250	16	175	256	25	4	776	103	19	729	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00				
Frt		0.992			0.989			0.983			0.973	
Flt Protected		0.985			0.983						0.999	
Satd. Flow (prot)	0	3364	0	0	3350	0	0	3291	0	0	3259	0
Flt Permitted		0.985			0.983			0.946			0.745	
Satd. Flow (perm)	0	3364	0	0	3350	0	0	3113	0	0	2430	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			5			12				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			3			3			1			
Peak Hour Factor	0.88	0.91	0.67	0.81	0.72	0.57	0.50	0.79	0.83	0.68	0.95	0.83
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	135	275	24	216	356	44	8	982	124	28	767	177
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	434	0	0	616	0	0	1114	0	0	972	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		

Existing PM Peak
Nitsch Engineering

Synchro 11 Report
Page 1

1: Alewife Brook Pkwy & Broadway













Lanes, Volumes, Timings

11/18/2022

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

1: Alewife Brook Pkwy & Broadway
Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		20.4			20.0			50.0			50.0	
Actuated g/C Ratio		0.16			0.16			0.39			0.39	
v/c Ratio		0.80			1.16			0.91			1.02	
Control Delay		63.1			139.2			48.1			72.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		63.1			139.2			48.1			72.7	
LOS		E			F			D			E	
Approach Delay		63.1			139.2			48.1			72.7	
Approach LOS		E			F			D			E	
90th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	23.2	23.2		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	20.7	20.7		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
30th %ile Green (s)	18.3	18.3		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Hold	Hold		Max	Max	
10th %ile Green (s)	15.0	15.0		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Hold	Hold		Max	Max	
Stops (vph)		358			375			770			772	
Fuel Used(gal)		8			18			17			23	
CO Emissions (g/hr)		556			1235			1196			1598	
NOx Emissions (g/hr)		108			240			233			311	
VOC Emissions (g/hr)		129			286			277			370	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		182			~317			449			~448	
Queue Length 95th (ft)		242			#318			471			#613	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		663			530			1229			954	
Starvation Cap Reductn		0			0			0			0	

1: Alewife Brook Pkwy & Broadway
Lanes, Volumes, Timings













11/18/2022

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.65			1.16			0.91			1.02	

Intersection Summary

Area Type: Other

Cycle Length: 132

Actuated Cycle Length: 127.4

Natural Cycle: 120

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.16

Intersection Signal Delay: 75.7

Intersection LOS: E

Intersection Capacity Utilization 77.6%

ICU Level of Service D

Analysis Period (min) 15

90th %ile Actuated Cycle: 132

70th %ile Actuated Cycle: 130.2

50th %ile Actuated Cycle: 127.7

30th %ile Actuated Cycle: 125.3

10th %ile Actuated Cycle: 122






~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Alewife Brook Pkwy & Broadway

 Ø2	 Ø9	 Ø4	 Ø8
56 s	19 s	31 s	26 s
 Ø6			
56 s			

Lane Group	Ø9
------------	----

Spillback Cap Reductn

Storage Cap Reductn

Reduced v/c Ratio

Intersection Summary

2: Broadway & Sunnyside Ave

HCM Unsignalized Intersection Capacity Analysis

11/18/2022



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	435	358	17	23	19
Future Volume (Veh/h)	5	435	358	17	23	19
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.87	0.88	0.61	0.56	0.62
Hourly flow rate (vph)	12	500	407	28	41	31
Pedestrians		23	23		23	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		3	3		2	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	458				991	467
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	270				899	281
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				83	95
cM capacity (veh/h)	1081				248	614
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	512	435	72			
Volume Left	12	0	41			
Volume Right	0	28	31			
cSH	1081	1700	334			
Volume to Capacity	0.01	0.26	0.22			
Queue Length 95th (ft)	1	0	20			
Control Delay (s)	0.3	0.0	18.7			
Lane LOS	A		C			
Approach Delay (s)	0.3	0.0	18.7			
Approach LOS			C			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			42.3%	ICU Level of Service		A
Analysis Period (min)			15			

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	129	185	13	152	258	55	23	1120	89	20	413	85
Future Volume (vph)	129	185	13	152	258	55	23	1120	89	20	413	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00			1.00	
Frt		0.992			0.983			0.987			0.977	
Flt Protected		0.982			0.983			0.999			0.998	
Satd. Flow (prot)	0	3226	0	0	3329	0	0	3302	0	0	3234	0
Flt Permitted		0.982			0.983			0.886			0.603	
Satd. Flow (perm)	0	3226	0	0	3329	0	0	2928	0	0	1954	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			9			9				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			32			4			1			2
Peak Hour Factor	0.82	0.74	0.55	0.72	0.77	0.80	0.56	0.86	0.69	0.71	0.80	0.84
Heavy Vehicles (%)	3%	6%	9%	0%	2%	0%	0%	0%	0%	6%	0%	3%
Adj. Flow (vph)	157	250	24	211	335	69	41	1302	129	28	516	101
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	431	0	0	615	0	0	1472	0	0	645	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		

No-Build AM Peak

Synchro 11 Report
Page 1

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

No-Build AM Peak













Synchro 11 Report
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1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		20.9			20.0			50.0			50.0	
Actuated g/C Ratio		0.16			0.16			0.39			0.39	
v/c Ratio		0.81			1.16			1.28			0.84	
Control Delay		64.2			139.6			166.5			47.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		64.2			139.6			166.5			47.7	
LOS		E			F			F			D	
Approach Delay		64.2			139.6			166.5			47.7	
Approach LOS		E			F			F			D	
90th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	24.0	24.0		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	21.4	21.4		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
30th %ile Green (s)	18.9	18.9		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
10th %ile Green (s)	15.4	15.4		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
Stops (vph)		306			380			982			447	
Fuel Used(gal)		7			18			53			11	
CO Emissions (g/hr)		478			1262			3710			740	
NOx Emissions (g/hr)		93			246			722			144	
VOC Emissions (g/hr)		111			292			860			172	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		182			~317			~820			254	
Queue Length 95th (ft)		191			#355			#932			296	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		634			528			1150			764	
Starvation Cap Reductn		0			0			0			0	

No-Build AM Peak

Synchro 11 Report
Page 3

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

No-Build AM Peak













Synchro 11 Report
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1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.68			1.16			1.28			0.84	

Intersection Summary

Area Type: Other

Cycle Length: 132

Actuated Cycle Length: 127.9

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.28

Intersection Signal Delay: 123.1

Intersection LOS: F

Intersection Capacity Utilization 87.9%

ICU Level of Service E

Analysis Period (min) 15

90th %ile Actuated Cycle: 132

70th %ile Actuated Cycle: 131

50th %ile Actuated Cycle: 128.4

30th %ile Actuated Cycle: 125.9

10th %ile Actuated Cycle: 122.4






~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Alewife Brook Pkwy & Broadway

 Ø2	 Ø9	 Ø4	 Ø8
56 s	19 s	31 s	26 s
 Ø6			
56 s			

Lane Group	Ø9
------------	----

Spillback Cap Reductn

Storage Cap Reductn

Reduced v/c Ratio

Intersection Summary

2: Broadway & Sunnyside Ave

HCM Unsignalized Intersection Capacity Analysis

11/18/2022



















Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	527	344	2	15	15
Future Volume (Veh/h)	6	527	344	2	15	15
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.95	0.89	0.50	0.65	0.54
Hourly flow rate (vph)	14	555	387	4	23	28
Pedestrians		19	19		19	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	410				1010	427
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	217				923	237
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				91	96
cM capacity (veh/h)	1138				243	657
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	569	391	51			
Volume Left	14	0	23			
Volume Right	0	4	28			
cSH	1138	1700	371			
Volume to Capacity	0.01	0.23	0.14			
Queue Length 95th (ft)	1	0	12			
Control Delay (s)	0.3	0.0	16.2			
Lane LOS	A		C			
Approach Delay (s)	0.3	0.0	16.2			
Approach LOS			C			
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			47.2%	ICU Level of Service		A
Analysis Period (min)			15			

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	137	288	18	201	294	29	5	892	119	22	838	169
Future Volume (vph)	137	288	18	201	294	29	5	892	119	22	838	169
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00				
Frt		0.992			0.989			0.983			0.973	
Flt Protected		0.985			0.983						0.999	
Satd. Flow (prot)	0	3364	0	0	3350	0	0	3291	0	0	3259	0
Flt Permitted		0.985			0.983			0.887			0.642	
Satd. Flow (perm)	0	3364	0	0	3350	0	0	2919	0	0	2094	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			5			12				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			3			3			1			
Peak Hour Factor	0.88	0.91	0.67	0.81	0.72	0.57	0.50	0.79	0.83	0.68	0.95	0.83
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	156	316	27	248	408	51	10	1129	143	32	882	204
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	499	0	0	707	0	0	1282	0	0	1118	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		

No-Build PM Peak

Synchro 11 Report
Page 1

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

No-Build PM Peak













Synchro 11 Report
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1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		22.3			20.0			50.0			50.0	
Actuated g/C Ratio		0.17			0.15			0.39			0.39	
v/c Ratio		0.85			1.35			1.13			1.38	
Control Delay		66.4			213.2			106.5			212.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		66.4			213.2			106.5			212.2	
LOS		E			F			F			F	
Approach Delay		66.4			213.2			106.5			212.2	
Approach LOS		E			F			F			F	
90th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	23.7	23.7		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
30th %ile Green (s)	21.0	21.0		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
10th %ile Green (s)	17.3	17.3		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
Stops (vph)		417			402			851			785	
Fuel Used(gal)		9			28			32			55	
CO Emissions (g/hr)		663			1961			2207			3839	
NOx Emissions (g/hr)		129			381			429			747	
VOC Emissions (g/hr)		154			454			512			890	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		214			~416			~665			~664	
Queue Length 95th (ft)		280			#390			#653			#812	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		653			522			1136			809	
Starvation Cap Reductn		0			0			0			0	

No-Build PM Peak

Synchro 11 Report
Page 3

1: Alewife Brook Pkwy & Broadway
Lanes, Volumes, Timings

11/18/2022

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

No-Build PM Peak













Synchro 11 Report
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1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.76			1.35			1.13			1.38	

Intersection Summary

Area Type: Other

Cycle Length: 132

Actuated Cycle Length: 129.4

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.38

Intersection Signal Delay: 154.6

Intersection LOS: F

Intersection Capacity Utilization 87.1%

ICU Level of Service E

Analysis Period (min) 15

90th %ile Actuated Cycle: 132

70th %ile Actuated Cycle: 132

50th %ile Actuated Cycle: 130.7

30th %ile Actuated Cycle: 128

10th %ile Actuated Cycle: 124.3






~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Alewife Brook Pkwy & Broadway










 Ø2	 Ø9	 Ø4	 Ø8
56 s	19 s	31 s	26 s
 Ø6			
56 s			

Lane Group	Ø9
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2: Broadway & Sunnyside Ave

HCM Unsignalized Intersection Capacity Analysis

















11/18/2022

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	6	500	412	20	23	22
Future Volume (Veh/h)	6	500	412	20	23	22
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.87	0.88	0.61	0.56	0.62
Hourly flow rate (vph)	14	575	468	33	41	35
Pedestrians		23	23		23	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		3	3		2	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.84				0.84	0.84
vC, conflicting volume	524				1134	530
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	342				1065	350
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				79	94
cM capacity (veh/h)	1013				196	559
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	589	501	76			
Volume Left	14	0	41			
Volume Right	0	33	35			
cSH	1013	1700	280			
Volume to Capacity	0.01	0.29	0.27			
Queue Length 95th (ft)	1	0	27			
Control Delay (s)	0.4	0.0	22.6			
Lane LOS	A		C			
Approach Delay (s)	0.4	0.0	22.6			
Approach LOS			C			
Intersection Summary						
Average Delay			1.7			
Intersection Capacity Utilization		46.6%		ICU Level of Service		A
Analysis Period (min)		15				

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	187	15	152	259	55	24	1120	89	20	413	86
Future Volume (vph)	131	187	15	152	259	55	24	1120	89	20	413	86
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00			1.00	
Frt		0.991			0.983			0.987			0.976	
Flt Protected		0.982			0.983			0.999			0.998	
Satd. Flow (prot)	0	3222	0	0	3329	0	0	3302	0	0	3230	0
Flt Permitted		0.982			0.983			0.876			0.602	
Satd. Flow (perm)	0	3222	0	0	3329	0	0	2895	0	0	1949	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			9			9				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			32			4			1			2
Peak Hour Factor	0.82	0.74	0.55	0.72	0.77	0.80	0.56	0.86	0.69	0.71	0.80	0.84
Heavy Vehicles (%)	3%	6%	9%	0%	2%	0%	0%	0%	0%	6%	0%	3%
Adj. Flow (vph)	160	253	27	211	336	69	43	1302	129	28	516	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	440	0	0	616	0	0	1474	0	0	646	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		

Build AM Peak

Synchro 11 Report
Page 1

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings













11/18/2022

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		21.2			20.0			50.0			50.0	
Actuated g/C Ratio		0.17			0.16			0.39			0.39	
v/c Ratio		0.82			1.17			1.30			0.85	
Control Delay		64.7			141.4			174.6			48.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		64.7			141.4			174.6			48.3	
LOS		E			F			F			D	
Approach Delay		64.7			141.4			174.6			48.3	
Approach LOS		E			F			F			D	
90th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	24.5	24.5		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	21.8	21.8		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
30th %ile Green (s)	19.2	19.2		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
10th %ile Green (s)	15.7	15.7		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Hold	Hold	
Stops (vph)		311			381			972			448	
Fuel Used(gal)		7			18			55			11	
CO Emissions (g/hr)		489			1276			3852			745	
NOx Emissions (g/hr)		95			248			749			145	
VOC Emissions (g/hr)		113			296			893			173	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		186			~320			~832			257	
Queue Length 95th (ft)		195			#355			#940			297	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		631			527			1135			760	
Starvation Cap Reductn		0			0			0			0	

Build AM Peak

Synchro 11 Report
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1: Alewife Brook Pkwy & Broadway
Lanes, Volumes, Timings

11/18/2022

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

Build AM Peak













Synchro 11 Report
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1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.70			1.17			1.30			0.85	

Intersection Summary

Area Type: Other

Cycle Length: 132

Actuated Cycle Length: 128.2

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.30

Intersection Signal Delay: 127.3

Intersection LOS: F

Intersection Capacity Utilization 88.9%

ICU Level of Service E

Analysis Period (min) 15

90th %ile Actuated Cycle: 132

70th %ile Actuated Cycle: 131.5

50th %ile Actuated Cycle: 128.8

30th %ile Actuated Cycle: 126.2

10th %ile Actuated Cycle: 122.7






~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 1: Alewife Brook Pkwy & Broadway

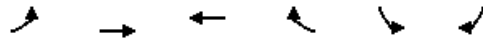
 Ø2	 Ø9	 Ø4	 Ø8
56 s	19 s	31 s	26 s
 Ø6			
56 s			

Lane Group	Ø9
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2: Broadway & Sunnyside Ave

HCM Unsignalized Intersection Capacity Analysis

11/18/2022












Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	8	527	344	4	21	19
Future Volume (Veh/h)	8	527	344	4	21	19
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.95	0.89	0.50	0.65	0.54
Hourly flow rate (vph)	19	555	387	8	32	35
Pedestrians		19	19		19	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		2	2		2	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	414				1022	429
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	222				937	239
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				86	95
cM capacity (veh/h)	1134				237	655
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	574	395	67			
Volume Left	19	0	32			
Volume Right	0	8	35			
cSH	1134	1700	356			
Volume to Capacity	0.02	0.23	0.19			
Queue Length 95th (ft)	1	0	17			
Control Delay (s)	0.5	0.0	17.5			
Lane LOS	A		C			
Approach Delay (s)	0.5	0.0	17.5			
Approach LOS			C			
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization			48.8%	ICU Level of Service		A
Analysis Period (min)			15			

3: Sunnyside Ave & Site Dr

HCM Unsignalized Intersection Capacity Analysis










11/18/2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	10	5	8	30	0
Future Volume (Veh/h)	0	10	5	8	30	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	5	9	33	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	52	33	33			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	52	33	33			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	959	1046	1592			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	11	14	33			
Volume Left	0	5	0			
Volume Right	11	0	0			
cSH	1046	1592	1700			
Volume to Capacity	0.01	0.00	0.02			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	8.5	2.6	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.5	2.6	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization		14.9%		ICU Level of Service		A
Analysis Period (min)		15				

3: Sunnyside Ave & Site Dr

HCM Unsignalized Intersection Capacity Analysis

















11/18/2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	10	5	8	30	0
Future Volume (Veh/h)	0	10	5	8	30	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	11	5	9	33	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	52	33	33			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	52	33	33			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	100			
cM capacity (veh/h)	959	1046	1592			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	11	14	33			
Volume Left	0	5	0			
Volume Right	11	0	0			
cSH	1046	1592	1700			
Volume to Capacity	0.01	0.00	0.02			
Queue Length 95th (ft)	1	0	0			
Control Delay (s)	8.5	2.6	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.5	2.6	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization		14.9%		ICU Level of Service		A
Analysis Period (min)		15				

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	289	20	201	296	29	7	892	119	22	838	171
Future Volume (vph)	139	289	20	201	296	29	7	892	119	22	838	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	11	11	11	10	10	10	10	10	10
Grade (%)		0%			0%			1%			1%	
Storage Length (ft)	0		0	0		175	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Ped Bike Factor		1.00			1.00			1.00				
Frt		0.991			0.989			0.983			0.972	
Flt Protected		0.985			0.983			0.999			0.999	
Satd. Flow (prot)	0	3361	0	0	3350	0	0	3288	0	0	3255	0
Flt Permitted		0.985			0.983			0.844			0.639	
Satd. Flow (perm)	0	3361	0	0	3350	0	0	2778	0	0	2082	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		4			5			12				
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		344			754			613			765	
Travel Time (s)		7.8			17.1			13.9			17.4	
Confl. Bikes (#/hr)			3			3			1			
Peak Hour Factor	0.88	0.91	0.67	0.81	0.72	0.57	0.50	0.79	0.83	0.68	0.95	0.83
Heavy Vehicles (%)	0%	2%	0%	0%	2%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	158	318	30	248	411	51	14	1129	143	32	882	206
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	506	0	0	710	0	0	1286	0	0	1120	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.04	1.04	1.04	1.04	1.04	1.04	1.10	1.10	1.10	1.10	1.10	1.10
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	1		1	1		1	1		1	1	
Detector Template	Left			Left			Left			Left		
Leading Detector (ft)	20	39		20	39		20	45		20	48	
Trailing Detector (ft)	0	33		0	33		0	39		0	42	
Detector 1 Position(ft)	0	33		0	33		0	39		0	42	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Turn Type	Split	NA		Split	NA		Perm	NA		Perm	NA	
Protected Phases	4	4		8	8			2			6	
Permitted Phases							2			6		

Build PM Peak

Synchro 11 Report
Page 1

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings













11/18/2022

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Turn Type	
Protected Phases	9
Permitted Phases	

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		12.0	12.0		12.0	12.0		8.0	8.0	
Minimum Split (s)	14.0	14.0		18.0	18.0		18.0	18.0		14.0	14.0	
Total Split (s)	31.0	31.0		26.0	26.0		56.0	56.0		56.0	56.0	
Total Split (%)	23.5%	23.5%		19.7%	19.7%		42.4%	42.4%		42.4%	42.4%	
Maximum Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.0			6.0			6.0			6.0	
Lead/Lag	Lead	Lead		Lag	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)		22.6			20.0			50.0			50.0	
Actuated g/C Ratio		0.17			0.15			0.39			0.39	
v/c Ratio		0.86			1.36			1.19			1.39	
Control Delay		66.9			216.4			131.5			217.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		66.9			216.4			131.5			217.8	
LOS		E			F			F			F	
Approach Delay		66.9			216.4			131.5			217.8	
Approach LOS		E			F			F			F	
90th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
90th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
70th %ile Green (s)	25.0	25.0		20.0	20.0		50.0	50.0		50.0	50.0	
70th %ile Term Code	Max	Max		Max	Max		Max	Max		Max	Max	
50th %ile Green (s)	24.1	24.1		20.0	20.0		50.0	50.0		50.0	50.0	
50th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
30th %ile Green (s)	21.4	21.4		20.0	20.0		50.0	50.0		50.0	50.0	
30th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
10th %ile Green (s)	17.6	17.6		20.0	20.0		50.0	50.0		50.0	50.0	
10th %ile Term Code	Gap	Gap		Max	Max		Max	Max		Max	Max	
Stops (vph)		421			403			831			781	
Fuel Used(gal)		10			28			37			56	
CO Emissions (g/hr)		674			1992			2567			3928	
NOx Emissions (g/hr)		131			388			499			764	
VOC Emissions (g/hr)		156			462			595			910	
Dilemma Vehicles (#)		0			0			0			0	
Queue Length 50th (ft)		217			~421			~698			~672	
Queue Length 95th (ft)		283			#393			#681			#816	
Internal Link Dist (ft)		264			674			533			685	
Turn Bay Length (ft)												
Base Capacity (vph)		651			521			1079			803	
Starvation Cap Reductn		0			0			0			0	

Build PM Peak

Synchro 11 Report
Page 3

1: Alewife Brook Pkwy & Broadway
Lanes, Volumes, Timings













11/18/2022

Lane Group	Ø9
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	19.0
Total Split (s)	19.0
Total Split (%)	14%
Maximum Green (s)	15.0
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Dont Walk (s)	8.0
Pedestrian Calls (#/hr)	100
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
90th %ile Green (s)	15.0
90th %ile Term Code	Ped
70th %ile Green (s)	15.0
70th %ile Term Code	Ped
50th %ile Green (s)	15.0
50th %ile Term Code	Ped
30th %ile Green (s)	15.0
30th %ile Term Code	Ped
10th %ile Green (s)	15.0
10th %ile Term Code	Ped
Stops (vph)	
Fuel Used(gal)	
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	

1: Alewife Brook Pkwy & Broadway

Lanes, Volumes, Timings

11/18/2022

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.78			1.36			1.19			1.39	

Intersection Summary

Area Type: Other

Cycle Length: 132

Actuated Cycle Length: 129.6

Natural Cycle: 150

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.39

Intersection Signal Delay: 165.8

Intersection LOS: F

Intersection Capacity Utilization 87.3%

ICU Level of Service E

Analysis Period (min) 15

90th %ile Actuated Cycle: 132

70th %ile Actuated Cycle: 132

50th %ile Actuated Cycle: 131.1

30th %ile Actuated Cycle: 128.4

10th %ile Actuated Cycle: 124.6






~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

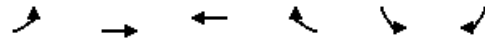
Splits and Phases: 1: Alewife Brook Pkwy & Broadway

 Ø2	 Ø9	 Ø4	 Ø8
56 s	19 s	31 s	26 s
 Ø6			
56 s			

Lane Group	Ø9
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

2: Broadway & Sunnyside Ave HCM Unsignalized Intersection Capacity Analysis

11/18/2022












Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	500	412	26	28	25
Future Volume (Veh/h)	5	500	412	26	28	25
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.42	0.87	0.88	0.61	0.56	0.62
Hourly flow rate (vph)	12	575	468	43	50	40
Pedestrians		23	23		23	
Lane Width (ft)		16.0	16.0		12.0	
Walking Speed (ft/s)		3.5	3.5		3.5	
Percent Blockage		3	3		2	
Right turn flare (veh)						
Median type		None	None			
Median storage (veh)						
Upstream signal (ft)			344			
pX, platoon unblocked	0.84				0.84	0.84
vC, conflicting volume	534				1134	536
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	354				1066	355
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				75	93
cM capacity (veh/h)	1003				196	555
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	587	511	90			
Volume Left	12	0	50			
Volume Right	0	43	40			
cSH	1003	1700	275			
Volume to Capacity	0.01	0.30	0.33			
Queue Length 95th (ft)	1	0	34			
Control Delay (s)	0.3	0.0	24.3			
Lane LOS	A		C			
Approach Delay (s)	0.3	0.0	24.3			
Approach LOS			C			
Intersection Summary						
Average Delay			2.0			
Intersection Capacity Utilization			46.0%	ICU Level of Service		A
Analysis Period (min)			15			

3: Sunnyside Ave & Site Dr

HCM Unsignalized Intersection Capacity Analysis

11/18/2022

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	8	10	26	20	0
Future Volume (Veh/h)	0	8	10	26	20	0
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	9	11	28	22	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	72	22	22			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	72	22	22			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	99	99			
cM capacity (veh/h)	926	1055	1593			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	9	39	22			
Volume Left	0	11	0			
Volume Right	9	0	0			
cSH	1055	1593	1700			
Volume to Capacity	0.01	0.01	0.01			
Queue Length 95th (ft)	1	1	0			
Control Delay (s)	8.4	2.1	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.4	2.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization		18.6%		ICU Level of Service		A
Analysis Period (min)		15				

Roster of Development Team

Development Team- 10 Sunnyside Avenue, Arlington

Project Sponsor: Housing Corporation of Arlington (HCA)

Primary Contact: Erica Schwartz, Executive Director

<https://www.housingcorporarlington.org>

The Housing Corporation of Arlington (HCA) was founded in 1986 to address rising real estate prices and the lack of affordable housing in the Town of Arlington. Today, HCA provides and advocates for decent, affordable housing for low- and moderate-income families and individuals in Arlington and surrounding communities, while promoting social and economic diversity. HCA envisions a vibrant, economically diverse Arlington that offers a wide range of affordable housing that blends into the community. HCA housing is safe, attractive, environmentally sound, and affordable in perpetuity. HCA envisions a community of resident leaders who engage in the civic conversation to make our town more affordable and inclusive. HCA's members drive this vision. Members include tenants, homeowners, congregations, businesses, and others who invest time, money, and other resources to keep our town diverse and stable.

Relevant Low Income Housing Tax Credit Experience:

PROJECT	YEAR COMPLETED	NUMBER OF UNITS
Capital Square	2013	32
Downing Square/Broadway Initiative	2022	48

Development Consultant: Gabby Geller Consulting LLC

Primary Contact: Gabby Geller, Owner

gabbygellerconsultingllc.com

Gabby Geller has more than 25 years of experience as an affordable housing and community development professional. Over that time, Gabby has worked through complex planning, policy, financing, and real estate challenges. Ms. Geller's direct project management portfolio features over 2000 units of primarily affordable but also, mixed-income, mixed-use housing. Ms. Geller has frequently on projects with a strong public private partnership component.

Design Team: Utile Design
Primary Contact: Nick Buehrens
<https://www.utiledesign.com>

Utile is a Boston-based design firm built like a think tank. We thrive on solving complex problems in intelligent and pragmatic ways. From theoretical issues that frame policy to the practical implementation of architectural commissions, Utile develops a rigorous research-based approach for finding the best solutions. Utile believes that multifamily housing must provide basic shelter but should also create a sense of community. Multifamily urban housing is a microcosm of the city and should engender all the vibrant interaction of its residents as happens in the larger community. The key to designing a healthy community is to create the proper balance of public and private spaces. Mixed uses in a residential context are an excellent opportunity to enrich these relationships between the residents and the neighborhood by creating more complete daily use patterns and points of contact between residents.

General Contractor: Bald Hill Builders, LLC
Primary Contact: Sean Whalen
<https://baldhillbuilders.com>

Bald Hill Builders was founded in 2004 and is a certified Women-owned Enterprise. Bald Hill Builders supports the development of affordable and sustainable housing to attract and retain a diverse population; stabilize and strengthen neighborhoods; and support workforce housing through the construction and rehabilitation of affordable housing construction projects. BHB believes construction funds should remain in the communities in which we work, providing economic opportunities to a diverse local workforce and material suppliers.

Local Zoning Attorney: Krattenmaker O'Connor & Ingber P.C.
Primary Contact: Mary Winstanley O'Connor, Esq.
www.koilaw.com

Transactional Attorney: KJP Partners LLP
Primary Contact: Kurt A. James, Esquire
www.kjppartners.com

Civil Engineer: Samiotes Consultants, Inc.
Primary Contact: Stephen Garvin
<https://samiotes.com>

Landscape Architect: Offshoots, Inc.
Primary Contact: Kate Kennen, RLA
www.offshootsinc.com



Office of the
Board of Assessors
Robbins Memorial Town Hall
Arlington, MA 02476
(781) 316-3050
Assessors@town.arlington.ma.us

Abutters List

Date: October 25, 2022

Subject Property Address: 10 SUNNYSIDE AVE Arlington, MA
Subject Property ID: 50-8-1.B

Search Distance: 300 Feet

The Board of Assessors certifies the names and addresses of requested parties in interest, all abutters and owners of land directly opposite on any public or private street or way and owners of land within 300 feet of the property lines of subject property.

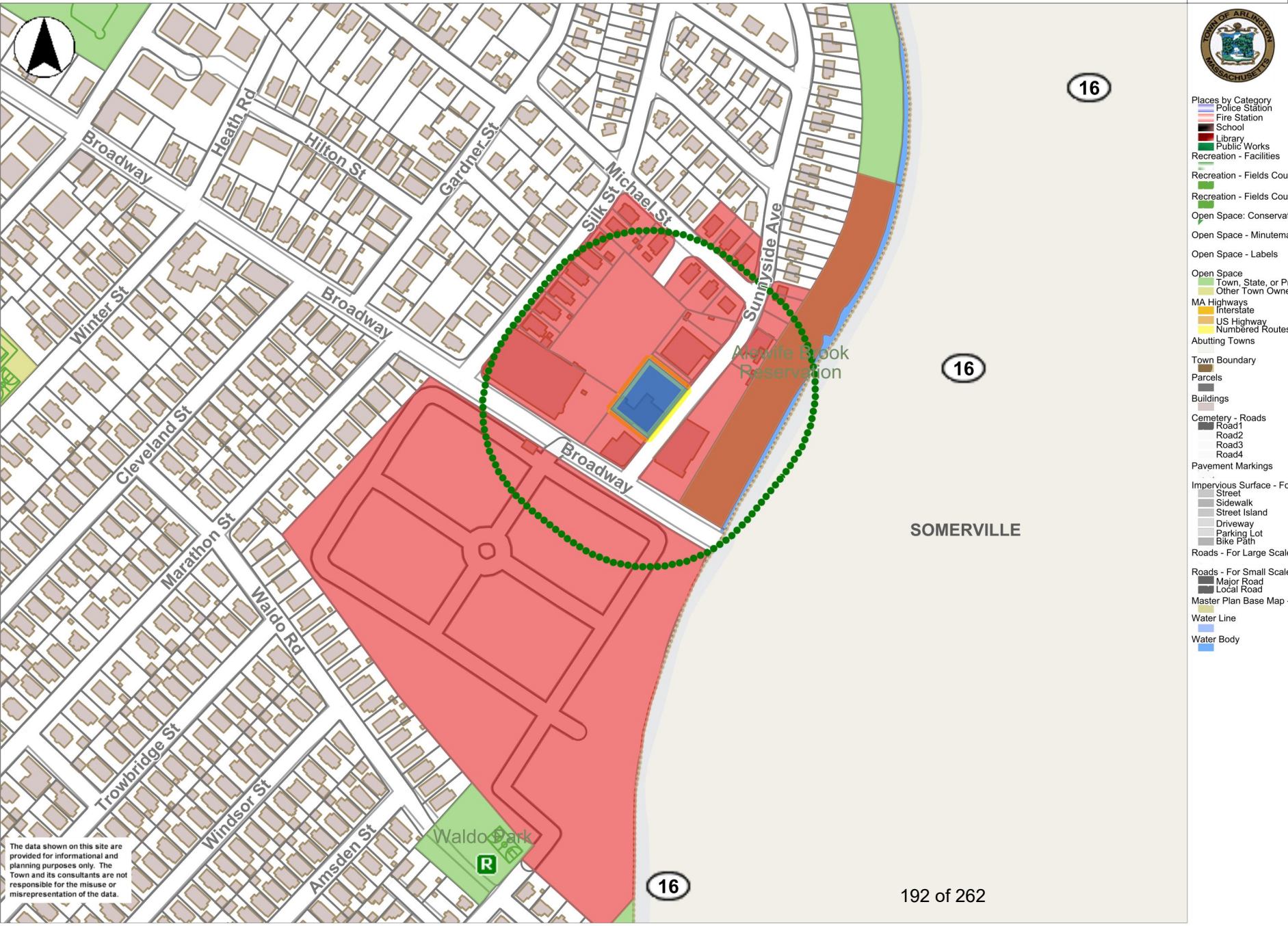
**BOARD OF ASSESSORS
TOWN HALL
ARLINGTON, MA 02476**

Board of Assessors

Please see enclosed map for any abutting property within 300 feet that is in another city or town.

ABUTTERS' LIST**Date: October 25, 2022****Subject Property Location: 10 SUNNYSIDE AVE Arlington, MA****Subject Property ID: 33-2-2.B****Search Distance: 300 Feet**

Parcel ID	Property Location	Owner 1	Owner 2	Mailing Address 1	Mailing Address 2	City/Town	State	Zip
33.A-2-11	27 SILK ST	GERARD BAUDOUIN		27 SILK ST		ARLINGTON	MA	02474
33.A-2-12	29 SILK ST	WILLIS BRYAN J ETAL/ TRUSTEES	GRIMALDI WILLIS FAMILY TRUST	29 SILK ST		ARLINGTON	MA	02474
33.A-2-19.1	19 SILK ST UNIT 1	CYRAN PETER J & BRITTANY A		95 BIG WOOD DRIVE		WESTFIELD	MA	01805
33.A-2-19.2	19 SILK ST UNIT 2	LARAQUI JAWAD & MEGAN		21 SILK ST UNIT 2		ARLINGTON	MA	02474
33-6-1	0-LOT BROADWAY	DEPT/CONSERVATION & RECREATION	WATER SUPPLY PROTECTION DIV	20 SOMERSET ST		BOSTON	MA	02108
26-6-16.A	30 BROADWAY	CATHOLIC CEMETARY ASSOC	ARCHDIOCESE OF BOSTON	100 CUMMINGS CTR	SUITE 421F	BEVERLY	MA	01915
33-2-1	22 SUNNYSIDE AVE	22-26 SUNNYSIDE AVENUE LLC		22 SUNNYSIDE AVE		ARLINGTON	MA	02474
33-2-1.B	0-LOT SUNNYSIDE AVE	MIRAK JOHN TR	YUKON REALTY TRUST	P.O. BOX 268		ARLINGTON	MA	02476
33-2-1.C	0-LOT SUNNYSIDE AVE	22-26 SUNNYSIDE AVENUE LLC		22 SUNNYSIDE AVE		ARLINGTON	MA	02474
33-2-2.A	0-LOT SUNNYSIDE AVE	MIRAK JOHN TR	YUKON REALTY TRUST	P.O. BOX 268		ARLINGTON	MA	02476
33-2-2.B	10 SUNNYSIDE AVE	MB REALTY GROUP LLC		339 MASS AVE		ARLINGTON	MA	02474
33-2-3	19-23 BROADWAY	KENTURY VENTURES LLC		23 BROADWAY		ARLINGTON	MA	02474
33-2-5.A	33 BROADWAY	ARLINGTON CENTER GARAGE &	SERVICE CORP	438 MASS AVE	SUITE 127	ARLINGTON	MA	02474
33-2-5.B	0-LOT BROADWAY	ARLINGTON CENTER GARAGE &	SERVICE CORP	P.O. BOX 268		ARLINGTON	MA	02476
33-2-8	15-17 SILK ST	KEPKA JOANNA ASIA	DOWLING LYNN	15 SILK STREET		ARLINGTON	MA	02474
33-2-10	23-25 SILK ST	HOOD PETER A & MARIA C		25 SILK ST		ARLINGTON	MA	02474
33-2-12	31-33 SILK ST	LIM MIKA	MCLAUGHLIN MARK ETAL	33 SILK ST		ARLINGTON	MA	02474
33-2-13	37 SILK ST	BARRY-SMITH CHRISTOPHER	BARRY-SMITH LORI A	37 SILK STREET		ARLINGTON	MA	02474
33-2-14	41 SILK ST	MAHONEY WILLIAM D		41 SILK ST		ARLINGTON	MA	02474
33-2-15	43 SILK ST	OLIVEIRA HORACIO & MARIA M	LIFE ESTATE	43 SILK ST		ARLINGTON	MA	02474
33-2-16	27 MICHAEL ST	SULLIVAN PHILIP/ETAL	MOCCIA JUDITH TRUSTEES	27 MICHAEL STREET	ENDICOTT REAL ESTATE TRUST	ARLINGTON	MA	02474
33-2-17.A	35 MICHAEL ST	MCCARTNEY MARY ELLEN ETAL/ TRS	MCCARTNEY CHAPLIN REALTY TRUST	35 MICHAEL ST		ARLINGTON	MA	02474
33-2-18	39 MICHAEL ST	LIENDO KARINA FABIOLA ETAL/ TRS	ACOSTA LIENDO TRUST	39 MICHAEL STREET		ARLINGTON	MA	02474
33-2-19	43 MICHAEL ST	CROWLEY PRISCILLA		43 MICHAEL STREET		ARLINGTON	MA	02474
33-3-1	25 SUNNYSIDE AVE	BOYLE DAVID T/TRUSTEE	D & B REALTY TRUST	16 SHORT STREET		BROWNFIELD	ME	04010
33-3-2	1 BROADWAY	BAYSTATE CONDOMINIUMS LLC		956 MASS AVE		LEXINGTON	MA	02420
33-3-4	0-LOT SUNNYSIDE AVE	BOYLE DAVID T/TRUSTEE	D & B REALTY TRUST	16 SHORT STREET		BROWNFIELD	ME	04010
33-3-5	35 SUNNYSIDE AVE	JOSEPH REGINE C		28 CRANMORE LN		MELROSE	MA	02176
33-3-6	37 SUNNYSIDE AVE	KIM SUNGHEE	LEE JOSEPF	37 SUNNYSIDE AVE		ARLINGTON	MA	02474
33-4-5.A	36 MICHAEL ST	HUTCHINSON DAVID/ELEANOR	TRS/DAH-EJH REALTY TRUST	36 MICHAEL ST		ARLINGTON	MA	02474
33-4-6	40 MICHAEL ST	HAN LU	YANG MEILING	40 MICHAEL ST		ARLINGTON	MA	02474
33-4-7	44 MICHAEL ST	CABRE MIQUEL MUNOZ &	BRODER LEAH	44 MICHAEL ST		ARLINGTON	MA	02474



REQUEST FOR SPECIAL PERMIT

TOWN OF ARLINGTON

In the matter of the Application of 10 Sunnyside Avenue to the Zoning Board of Appeals for the Town of Arlington:

Application for a Special Permit is herewith made, in accordance with Section 3.3 of the Zoning Bylaw of the Town of Arlington, Massachusetts, seeking relief from the following specific provisions of the Zoning Bylaw, and as described fully in the attached form, *Special Permit Criteria*:

10 Sunnyside Avenue seeks zoning relief via Chapter 40 B for the following requirements: Section 5 Subsection 5.3.17, Section 5, Table 5.5.2.A, Section 5, Subsection 5.3.21.A.2.D, By-law Section 6, Subsection 6.1.2 and the Bicycle Parking Design Guidelines, Buy-Law Section 6, Subsection 6.1.4, By-law Section 6, Subsection 6.1.11 (c)(11), By-law Section 6, Subsection 6.1.11(c)(3), By law Section 6, Subsection 6.1.11(D)(1)-(6), By-law Section 5, Subsection 5.3.7(A) and (B), Title IX, Article 3, Sections 4A and 4B Enforcement and Fees and Comprehensive Permit Requirement for Statement on impact on Municipal Facilities.

The Applicant states he/she/they is/are the owner/occupant of the land in Arlington located at

10 Sunnyside Avenue with respect to such relief is sought; that no unfavorable action has been taken by the Zoning Board of Appeals upon a similar petition regarding this property within the two (2) years next immediately prior to the filing hereof. The applicant expressly agrees to full compliance with any and all conditions and qualifications imposed upon this permission, whether by the Zoning Bylaw or by the Zoning Board of Appeals, should the same be granted. The Applicant represents that the grounds for the relief sought are as follows:

10 Sunnyside Avenue seeks zoning relief via Chapter 40 B for the following requirements: Section 5 Subsection 5.3.17, Section 5, Table 5.5.2.A, Section 5, Subsection 5.3.21.A.2.D, By-law Section 6, Subsection 6.1.2 and the Bicycle Parking Design Guidelines, Buy-Law Section 6, Subsection 6.1.4, By-law Section 6, Subsection 6.1.11 (c)(11), By-law Section 6, Subsection 6.1.11(c)(3), By law Section 6, Subsection 6.1.11(D)(1)-(6), By-law Section 5, Subsection 5.3.7(A) and (B), Title IX, Article 3, Sections 4A and 4B Enforcement and Fees and Comprehensive Permit Requirement for Statement on impact on Municipal Facilities.

E-Mail: eschwarz@housingcorporarlington.org Signed: _____ Date: 3/20/2023

Telephone: 781-859-5294 ext. 1 Address: 252 Massachusetts Avenue, Arlington, MA 02474

Special Permit Criteria: Per Section 3.3.3 of the Zoning Bylaw, a Special Permit shall only be granted upon the Board's determination that the benefits of the proposed project will outweigh its adverse effects. The responses provided below will inform the Board as to whether the standards for approval have been met.

A). Indicate where the requested use is listed in the Table of Use Regulations as allowed by Special Permit in the district for which the application is made or is so designated elsewhere in the Zoning Bylaw.

See attached Comprehensive Permit Drawing set dated 3/9/2023 prepared by Utile Design

B). Explain why *the requested use is essential or desirable to the public convenience or welfare.*

See attached Impact Analysis Report stating how 10 Sunnyside Avenue is adherent to the Housing and Master Plans of the Town of Arlington

C). Explain why *the requested use will not create undue traffic congestion; or unduly impair pedestrian safety.*

See attached Traffic Impact Study prepared by Nitsch Engineering

D). Explain why *the requested use will not overload any public water, drainage or sewer system, or any other municipal system to such an extent that the requested use or any developed use in the immediate area or any other area of the Town will be unduly subjected to hazards affecting health, safety or the general welfare.*

See Impact Analysis Report prepared by Samiotes Consultants, Inc.

E). Describe how any special regulations for the use, as may be provided in the Zoning Bylaw, including but not limited to the provisions of Section 8 are fulfilled.

See attached Impact report provided by Samiotes Consultants, Inc.

F). Explain why the requested use will not impair the integrity or character of the district or adjoining districts, nor be detrimental to the health or welfare.

See attached Impact report provided by Samiotes Consultants, Inc.

G). Explain why *the requested use will not, by its addition to a neighborhood, cause an excess of the use that could be detrimental to the character of said neighborhood.*

See attached Impact report provided by Samiotes Consultants, Inc.

3). Describe how desirable relief may be granted without substantial detriment to the public good.

See attached Impact Analysis Report prepared by Samiotes Consultants, Inc.

4). Describe how desirable relief may be granted ... without nullifying or substantially derogating from the intent or purpose of the Zoning Bylaw of the Town of Arlington, Massachusetts.

See attached Impact Analysis Report prepared by Samiotes Consultants, Inc.

State Law (MGL Chapter 40a, Section 10) requires that the Zoning Board of Appeals must find that all four (4) criteria are met in order to be authorized to grant a Variance. If any one of the standards is not met, the Board must deny the Variance.

TOWN OF ARLINGTON
Open Space / Gross Floor Area Information
For Applications to the Zoning Board of Appeals

Refer to Section 2: *Definitions*, and Section 5: *District Regulations* in the Zoning Bylaw of the Town of Arlington before completing this form.

Address: 10 Sunnyside Avenue

Zoning District: B4

OPEN SPACE*

	EXISTING	PROPOSED
Total lot area	<u>16,500 sf</u>	<u>16,500 sf</u>
Open Space, Usable	<u>none</u>	<u>2,000 sf</u>
Open Space, Landscaped	<u>none</u>	<u>1,500 sf</u>

* Refer to the Definitions in Section 2 of the Zoning Bylaw.

GROSS FLOOR AREA (GFA) †

Accessory Building	<u>n/a</u>	<u>n/a</u>
Basement or Cellar (meeting the definition of Story, excluding mechanical use areas)	<u>2,700 sf</u>	<u>n/a</u>
1 st Floor	<u>5,253 sf</u>	<u>3,408 sf</u>
2 nd Floor	<u>270 sf</u>	<u>11,520 sf</u>
3 rd Floor	<u>n/a</u>	<u>11,520 sf</u>
4 th Floor	<u>n/a</u>	<u>11,520 sf</u>
5 th Floor	<u>n/a</u>	<u>11,038 sf</u>
Attic (greater than 7'-0" in height, excluding elevator machinery; or mechanical equipment)	<u>n/a</u>	<u>n/a</u>
Parking garages (except as used for accessory parking or off-street loading purposes)	<u>n/a</u>	<u>n/a</u>
All weather habitable porches and balconies	<u>n/a</u>	<u>2,000 sf</u>
Total Gross Floor Area (GFA)	<u>8,223 sf</u>	<u>49,006 sf</u>

† Refer to Definition of Gross Floor Area in Section 2 and Section 5 of the Zoning Bylaw.

REQUIRED MINIMUM OPEN SPACE AREA

Landscaped Open Space (Sq. Ft.)	<u>4,900 sf</u>	<u>1,500 sf</u>
Landscaped Open Space (% of GFA)	<u>10%</u>	<u>3%</u>
Usable Open Space (Sq. Ft.)	<u>9,801 sf</u>	<u>2,000 sf</u>
Usable Open Space (% of GFA)	<u>20%</u>	<u>4%</u>

This worksheet applies to plans dated 3/9/2023 designed by Utile Design

Reviewed with Building Inspector: _____ Date: _____

TOWN OF ARLINGTON
 Dimensional and Parking Information
 For Applications to the Zoning Board of Appeals

1. Property Location: 10 Sunnyside Avenue Zoning District: B4

2. Present Use/Occupancy: Automotive/Vacant No. of dwelling units 0

3. Existing Gross Floor Area (refer to Section 5.3.22 of the Zoning Bylaw and provide supporting documentation [worksheet and drawings] showing dimensions of GFA by floor):
8,223 Sq. Ft.

4. Proposed Use/Occupancy: Multi-family residential No. of dwelling units 43

5. Proposed Gross Floor Area (refer to Section 5.3.22 of the Zoning Bylaw and provide supporting documentation [worksheet and drawings] showing dimensions of GFA by floor):
49,006 Sq. Ft.

	Present Conditions	Proposed Conditions	Min. or max Required by Zoning
6. Lot size (Sq. Ft.)	16,500	16,500	min. no requirement
7. Frontage (Ft.)	150	150	min. 50
8. Floor area ratio	0.28	2.97	max. 3.00
9. Lot Coverage (%)	28%	81%	max no requirement
10. Lot Area per Dwelling Unit (Sq. Ft.)	0	384	min. no requirement
11. Front Yard Depth (Ft.)	4.2 to 5	2 to 4	min. 0
12. Left Side Yard Depth (Ft.)	1 to 8.7	5.5	min. 0
13. Right Side Yard Depth (Ft.)	81.7 to 118.8	5.5 to 12.25	min. 0
14. Rear Yard Depth (Ft.)	0.4 to 60	5.5	min. 10+(L/10)
15. Height (Stories)	1	5	max. 5
16. Height (Ft.)	unknown	58.167	max. 60
17. Landscaped Open Space (Sq. Ft.) Refer to Section 2 in the Zoning Bylaw.	none	1,500	
17A. Landscaped Open Space (% of GFA)	none	3%	min. 10%
18. Usable Open Space (Sq. Ft.) Refer to Section 2 in the Zoning Bylaw.	none	2,000	
18A. Usable Open Space (% of GFA)	none	4%	min. 20%
19. Number of Parking Spaces	unknown	21	min. 0.25 / DU
20. Parking area setbacks (if applicable)	none	N/A	min. N/A
21. Number of Loading Spaces (if applicable)	none	N/A	min. no requirement
22. Type of construction	unknown	5A over 1A	N/A
23. Slope of proposed roof(s) (in. per ft.)	unknown	1/4":1'	min. no requirement



10 SUNNYSIDE AVE. COMPREHENSIVE PERMIT

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ZONING SUMMARY

REGULATIONS	REF. SECTION	ALLOWED	PROPOSED	RELIEF REQUESTED
LOT AREA MIN.	Table 5.5.2.A	No Requirement	16,500 sf	N
LOT AREA MIN. PER UNIT	Table 5.5.2.A	No Requirement	N/A	N
LOT FRONTAGE MIN.	Table 5.5.2.A	50'	132'	N
FRONT SETBACK	Table 5.5.2.B	0'	2' to 10'	N
SIDE SETBACK	Table 5.5.2.B	0'	5'-6" and 12'	N
REAR SETBACK	Table 5.5.2.B	10+(L/10)	5'-6"	Y
SCREENING & BUFFERING	Sec. 5.3.21.A.1	Not Required	N/A Site does not abut residential lots, not subject to screening requirements	N
SCREENING FOR OFFSTREET PARKING	Sec. 5.3.21.A.2	Not Required per 6.1.11.C	N/A All parking is within building, not subject to screening requirements	N
UPPER- STORY STEPBACKS	Sec. 5.3.21.A.2. C	7.5' required above the third story	6' and 3' stepbacks for part of L5, otherwise none	Y
OPEN SPACE	Sec. 5.2.2.B and 5.3.21.A.2.D	Min. 10% Landscape and 20% Usable Open Space	1,500 Landscape and 2,000 sf Usable Open Space	Y
FAR	Sec. 5.5.2B Amendment, June 2022	3	2.97	N
BUILDING HEIGHT	Table 5.5.2.B	60' / 5 stories	60' / 5 stories	N
PARKING MIN.	Sec. 6.1.5	0.25 spaces per DU	0.49	N
LONG-TERM BIKE PARKING MIN.	Sec. 6.1.12	1.5 /DU and 0.3 /1000 gsf Office	37 (65 required)	Y
SHORT-TERM BIKE PARKING MIN.	Sec. 6.1.12	0.1/DU and 0.5/1000 gsf Office	6 (5 required)	Y
SURFACE PARKING LOT SETBACK	Sec. 6.1.11.D	10' front and 5' sides and rear with fence	10' front and 5'-6" to 12' sides	Y

NOTE: Refer to formal waiver request prepared by project attorney for additional detail.

AREA SUMMARY

LEVEL	GSF	1-BR	2-BR	3-BR	NON-RESIDENTIAL PROGRAM
SITE AREA	16500				
GROUND FLOOR	3408	0	0	0	OFFICE AND MEETING RM (278 SF); COMMERCIAL/OFFICE (608 SF) AND PARKING
SECOND FLOOR	11520	3	5	2	COMMUNITY ROOM (727 SF)
THIRD FLOOR	11520	4	5	2	
FOURTH FLOOR	11520	4	5	2	
FIFTH FLOOR	11038	5	5	1	
TOTAL	49006	16	20	7	

10 SUNNYSIDE AVE.

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474

Housing Corporation of
Arlington

252 MASSACHUSETTS AVE.
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BLW ENGINEERS

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STAMP

DATE

ISSUE / REVISION

03/09/2023

COMPREHENSIVE PERMIT

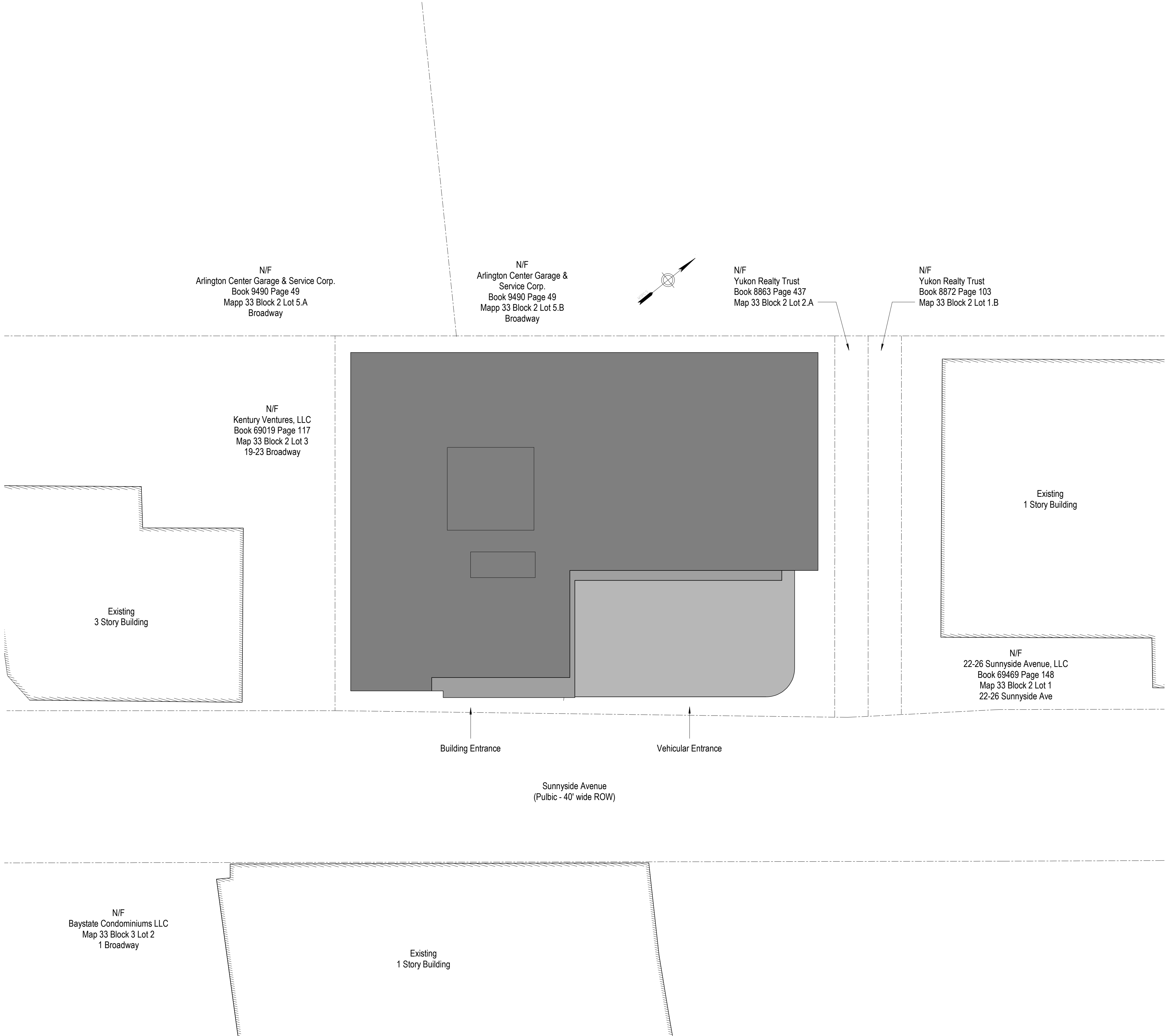
REVISIONS ON SHEET

SCALE

UTILITE PROJECT NUMBER
2244

COVER SHEET

G0.00



1 Locus Plan - 100ft
1/16" = 1'-0"

10 SUNNYSIDE AVE.

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474

PROJECT

Housing Corporation of
Arlington

252 MASSACHUSETTS AVE.
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03/09/2023	COMPREHENSIVE PERMIT

REVISIONS ON SHEET

SCALE	UTILE PROJECT NUMBER
1/16" = 1'-0"	2244

LOCUS MAP

G0.01



2 Rendering - Axon
1/4" = 1'-0"



1 Rendering - Elevational Perspective
1/4" = 1'-0"

10 SUNNYSIDE AVE.

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STAMP

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03/09/2023	COMPREHENSIVE PERMIT

REVISIONS ON SHEET

SCALE
1/4" = 1'-0"

UTILITE PROJECT NUMBER
2244

BUILDING RENDERINGS

G0.02



2 Rendering - View Down Sunnyside
1/4" = 1'-0"



1 Rendering - Broadway at Sunnyside
1/4" = 1'-0"

10 SUNNYSIDE AVE.

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PROJECT

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REVISIONS ON SHEET

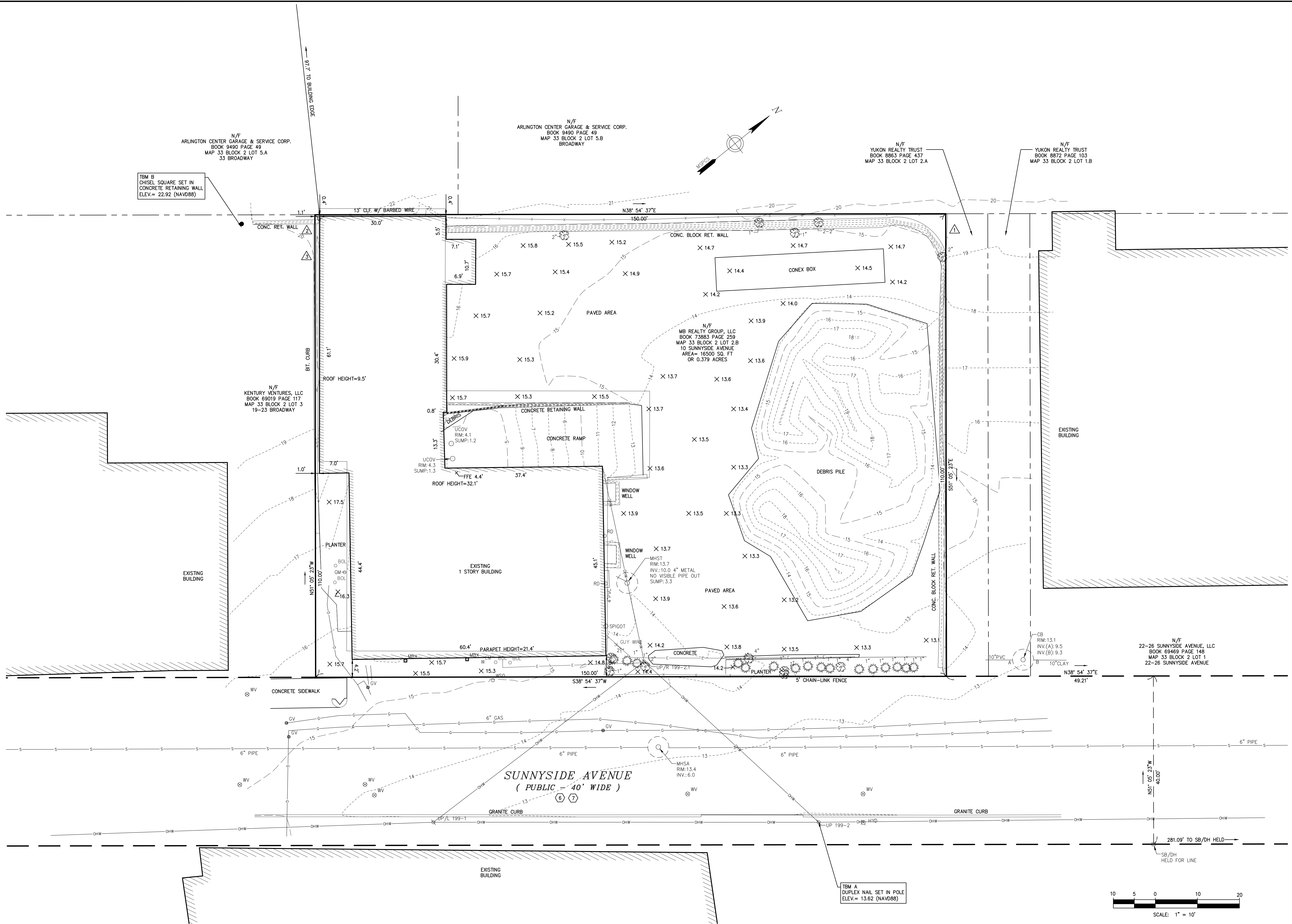
SCALE
1/4" = 1'-0"

UTILITE PROJECT NUMBER
2244

BUILDING RENDERINGS

G0.03

File: V:\PROJECTS\ANY\K6 078306.000\09 DESIGN SURVEY\ALTA_078306.DWG



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PREPARED FOR:

HOUSING
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ARLINGTON

252
MASSACHUSETTS
AVENUE

ARLINGTON, MA
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IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE
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ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT OR LAND
SURVEYOR TO ALTER AN ITEM IN ANY WAY IF AN ITEM BEARING THE
STAMP OF A LICENSED PROFESSIONAL IS ALTERED. THE ALTERING
ENGINEER, ARCHITECT, LANDSCAPE ARCHITECT OR LAND
SURVEYOR SHALL STAMP THE DOCUMENT AND INCLUDE THE
NOTATION "ALTERED BY" FOLLOWED BY THEIR SIGNATURE, THE
DATE OF SUCH ALTERATION, AND A SPECIFIC DESCRIPTION
OF THE ALTERATION.

PROJECT TITLE:

ALTA/NSPS LAND TITLE
SURVEY

10 SUNNYSIDE AVENUE

ARLINGTON, MA

No.	Submittal / Revision	App'd	By	Date
0	Issued For Review	WJD	MWC	09/09/2022
1	Attorney Comments	WJD	MWC	09/27/2022
2	Issued as Final	WJD	MWC	10/14/2022
3	Add Structures on Abutters Parcels	WJD	MWC	10/28/2022

Designed By: ---	Drawn By: MWC	Checked By: CDE
Issue Date: 9/09/2022	Project No: 078306	Scale: 1" = 10'

Drawing No.:

SHEET 1 OF 2

File: V:\PROJECTS\ANY\K6 078306.000\09_DESIGN\SURVEY\ALTA_078306.DWG

GENERAL NOTES:

1. THE EXISTING CONDITIONS INFORMATION SHOWN HEREON IS THE RESULT OF AN ON-THE-GROUND SURVEY PERFORMED BY CHA CONSULTING, INC. IN AUGUST OF 2022.
2. ALL DEED REFERENCES ARE TO SOUTH MIDDLESEX COUNTY REGISTRY OF DEEDS UNLESS OTHERWISE NOTED.
3. LOCUS OWNER OF RECORD:
MB REALTY GROUP, LLC
DEED BOOK 73883 PAGE 259
MAP 33 BLOCK 2 LOT 2.B
4. TOPOGRAPHY, CONTOURS AND BENCHMARKS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAV88). TEMPORARY BENCHMARKS, REFERENCED TO THE DATUM ARE INDICATED ON THE SURVEY.
- IN THE EVENT THAT BENCHMARKS (TBM'S), ESTABLISHED FOR THIS PROJECT AND PUBLISHED ON THIS SURVEY ARE DESTROYED, NOT RECOVERABLE OR A DISCREPANCY IS FOUND, THE USER SHOULD NOTIFY THIS FIRM IN WRITING PRIOR TO COMMENCING OR CONTINUING ANY WORK.
5. THE PROJECT AREA IS LOCATED IN FLOOD ZONE "X" AREAS OF MINIMAL FLOODING AS SHOWN ON FLOOD INSURANCE RATE MAP FOR MIDDLESEX COUNTY, COMMUNITY PANEL NUMBER 25017C0417E, EFFECTIVE DATE JUNE 4, 2010.
6. THE LOCUS PARCEL IS LOCATED IN THE TOWN OF ARLINGTON B4 DISTRICT (VEHICULAR ORIENTED BUSINESS) AS DEFINED BY THE TOWN OF ARLINGTON ZONING MAP.
7. LOCATION OF SUBSURFACE UTILITIES SHOWN HEREON ARE APPROXIMATE AND ADDITIONAL UTILITIES MAY EXIST THAT ARE NOT SHOWN ON THIS PLAN. LOCATIONS ARE COMPILED FROM UTILITY PLANS OF RECORD AND DIG-SAFE FIELD MARKINGS. RIM AND INVERT INFORMATION HAS BEEN COMPILED AND FIELD VERIFIED WHERE POSSIBLE. THIS INFORMATION IS NOT TO BE USED FOR CONSTRUCTION. PRIOR TO ANY CONSTRUCTION, CONTACT DIG-SAFE (811) TO FIELD VERIFY LOCATION OF ALL UTILITIES.
8. PLAN REFERENCES:
PLAN #354 OF 1957
PLAN #415 OF 1947
PLAN #723 OF 1955
PLAN BOOK 3202 PAGE END
9. THE WORD "CERTIFY" IS UNDERSTOOD TO BE AN EXPRESSION OF PROFESSIONAL OPINION BY THE LAND SURVEYOR WHICH IS BASED ON HIS BEST KNOWLEDGE, INFORMATION AND BELIEF, FORMULATED IN ACCORDANCE WITH COMMONLY ACCEPTED PROCEDURES CONSISTENT WITH APPLICABLE STANDARDS OF PRACTICE, AND AS SUCH IT CONSTITUTES NEITHER A GUARANTEE NOR WARRANTY, EITHER EXPRESS OR IMPLIED. THE CERTIFICATIONS SHOWN ARE NOT CERTIFICATIONS TO THE TITLE OR OWNERSHIP OF THE PROPERTIES SHOWN.
10. NO TREES OF 8" OR GREATER CALIPER WERE FOUND ON THE SITE.

RECORD DESCRIPTION: OFFICE NO. T99957A

LOT A SHOWN ON PLAN ENTITLED "LAND IN ARLINGTON, MASS., OWNED BY GRACE S. RUSSELL", DATED OCTOBER 25, 1905 BY DANA E. PERKINS, SURVEYOR, RECORDED WITH SAID DEEDS, BOOK 3202, PAGE END, EXCLUDING A 10 FOOT WIDE STRIP OF LAND ON THE NORTHEASTERLY SIDE OF LOCUS AS SET FORTH IN DEED OF ADLER M. B. HANSON ET AL, DATED NOVEMBER 29, 1956, RECORDED WITH MIDDLESEX COUNTY (SOUTHERN DISTRICT) REGISTRY OF DEEDS, BOOK 8863, PAGE 437.

ARLINGTON ASSESSOR'S PARCEL ID NO. 33-2-2.B

LEGEND:

	BUILDING LINE		WV	WATER VALVE
	PARCEL BOUNDARY LINE		HYD	HYDRANT
	ADJOINING PARCEL LINE		CB	ROUND CATCH BASIN
	STREET/HIGHWAY LINE		CB	SQUARE CATCH BASIN
	EDGE OF ASPHALT		MHST	STORM MANHOLE
	EDGE OF CONCRETE		GV	GAS VALVE
	FENCE LINE		MHSA	SEWER MANHOLE
	ELECTRIC LINE		Q	UTILITY POLE
	GAS LINE			EXCEPTION
	OVERHEAD UTILITY LINE			ENCROACHMENT
	SEWER LINE		TREE	PINE TREE
	DRAINAGE LINE		TREE	DECIDUOUS TREE
	WATER LINE			

SURVEY CERTIFICATION

FIDELITY NATIONAL TITLE INSURANCE COMPANY OFFICE NUMBER T99957A; DATED AUGUST 10, 2022.

THIS SURVEY IS MADE FOR THE BENEFIT OF:

MB REALTY GROUP, LLC TOGETHER WITH THEIR SUCCESSORS AND/OR ASSIGNS AS THEIR INTERESTS MAY APPEAR, FIDELITY NATIONAL TITLE INSURANCE COMPANY TOGETHER WITH THEIR SUCCESSORS AND/OR ASSIGNS AS THEIR INTERESTS MAY APPEAR, HOUSING CORPORATION OF ARLINGTON TOGETHER WITH THEIR SUCCESSORS AND/OR ASSIGNS AS THEIR INTERESTS MAY APPEAR, MASSDOCS LANDERS TOGETHER WITH THEIR SUCCESSORS AND/OR ASSIGNS AS THEIR INTERESTS MAY APPEAR, LIFE INSURANCE COMMUNITY INVESTMENT INITIATIVE, LLC TOGETHER WITH THEIR SUCCESSORS AND/OR ASSIGNS AS THEIR INTERESTS MAY APPEAR.

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2021 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDES ITEMS 2, 3, 4, 5, 8, 9, 11, 11(a), 13, 17 & 18 OF TABLE A THEREOF. THE FIELDWORK WAS COMPLETED IN AUGUST OF 2022.

THERE IS NO EVIDENCE OF CEMETERIES.

THE LEGAL DESCRIPTION FORMS A MATHEMATICALLY CLOSED FIGURE WITHOUT GAPS, GORES OR OVERLAPS.

THE PROPERTY HAVE DIRECT ACCESS TO SUNNYSIDE AVENUE, BEING A DEDICATED PUBLIC STREET.

THERE IS NO EVIDENCE OF CURRENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

THERE IS NO EVIDENCE OF USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.

THE PREMISES SHOWN ON THE SURVEY IS THE SAME PROPERTY DESCRIBED IN EXHIBIT A OF THE TITLE COMMITMENT.

WILLIAM J. DORGAN, PROFESSIONAL LAND SURVEYOR NO. 49622
DATE:

FIDELITY NATIONAL TITLE INSURANCE COMPANY,
OFFICE NUMBER: T99957A
SCHEDULE B PART 2
EFFECTIVE DATE: AUGUST 10, 2022

- RIGHTS OR CLAIMS OF PERSONS IN POSSESSION. (NOT SURVEY RELATED)
- EASEMENTS OR CLAIMS OF EASEMENTS NOT SHOWN BY THE PUBLIC RECORDS, BOUNDARY-LINE DISPUTES, OVERLAPS, ENCROACHMENTS, TITLE TO FILLED LANDS (IF ANY) AND ANY MATTERS NOT OF RECORD WHICH WOULD BE DISCLOSED BY AN ACCURATE SURVEY AND INSPECTION OF THE PREMISES. (SEE THIS SURVEY WITH RESPECT TO ENCROACHMENTS)
- ANY LIEN, OR RIGHT TO A LIEN, FOR SERVICES, LABOR OR MATERIAL, HERETOFORE OR HEREAFTER FURNISHED, IMPOSED BY LAW AND NOT SHOWN BY THE PUBLIC RECORDS. (NOT SURVEY RELATED)
- ANY DEFECT, LIEN, ENCUMBRANCES, ADVERSE CLAIM, OR OTHER MATTER THAT APPEARS FOR THE FIRST TIME IN THE PUBLIC RECORDS OR IS CREATED, ATTACHES, OR IS DISCLOSED BETWEEN THE COMMITMENT DATE AND THE DATE ON WHICH ALL OF THE SCHEDULE B, PART I-REQUIREMENTS ARE MET. (NOT SURVEY RELATED)
- LIENS FOR TAXES AND MUNICIPAL CHARGES WHICH BECOME DUE AND PAYABLE SUBSEQUENT TO THE DATE OF SAID POLICY. (NOT SURVEY RELATED)
- TAKING BY THE TOWN OF ARLINGTON FOR CONSTRUCTING, MAINTAINING AND OPERATING WATER WORKS, DATED AUGUST 5, 1946, RECORDED WITH SAID DEEDS, BOOK 7029, PAGE 223. SEE ALSO PLAN NO. 1177 OF 1946, RECORDED WITH SAID DEEDS, BOOK 7029, PAGE 223. (SEE THIS SURVEY)
- ORDER OF TAKING BY THE TOWN OF ARLINGTON FOR THE LAYOUT OF SUNNYSIDE AVENUE, DATED APRIL 25, 1955, RECORDED WITH SAID DEEDS, BOOK 8456, PAGE 138. SEE ALSO PLAN NO. 723 OF 1955, RECORDED WITH SAID DEEDS, BOOK 8456, PAGE 138. (SEE THIS SURVEY)
- DECISION BY THE TOWN OF ARLINGTON ZONING BOARD OF APPEALS, RECORDED WITH SAID DEEDS, BOOK 78503, PAGE 1. (NOT SURVEY RELATED)

POTENTIAL ENCROACHMENTS:

- CHAIN-LINK FENCE CROSSES OVER PROPERTY LINE 0' TO 0.4'.
- RETAINING WALL CROSSES OVER PROPERTY LINE 0.8'.
- BIT. CURB CROSSES OVER PROPERTY LINE 0' TO 0.4'.

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PREPARED FOR:

HOUSING
CORPORATION OF
ARLINGTON

252
MASSACHUSETTS
AVENUE

ARLINGTON, MA
02474

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PROJECT TITLE:

ALTA/NSPS LAND TITLE
SURVEY

10 SUNNYSIDE AVENUE

ARLINGTON, MA

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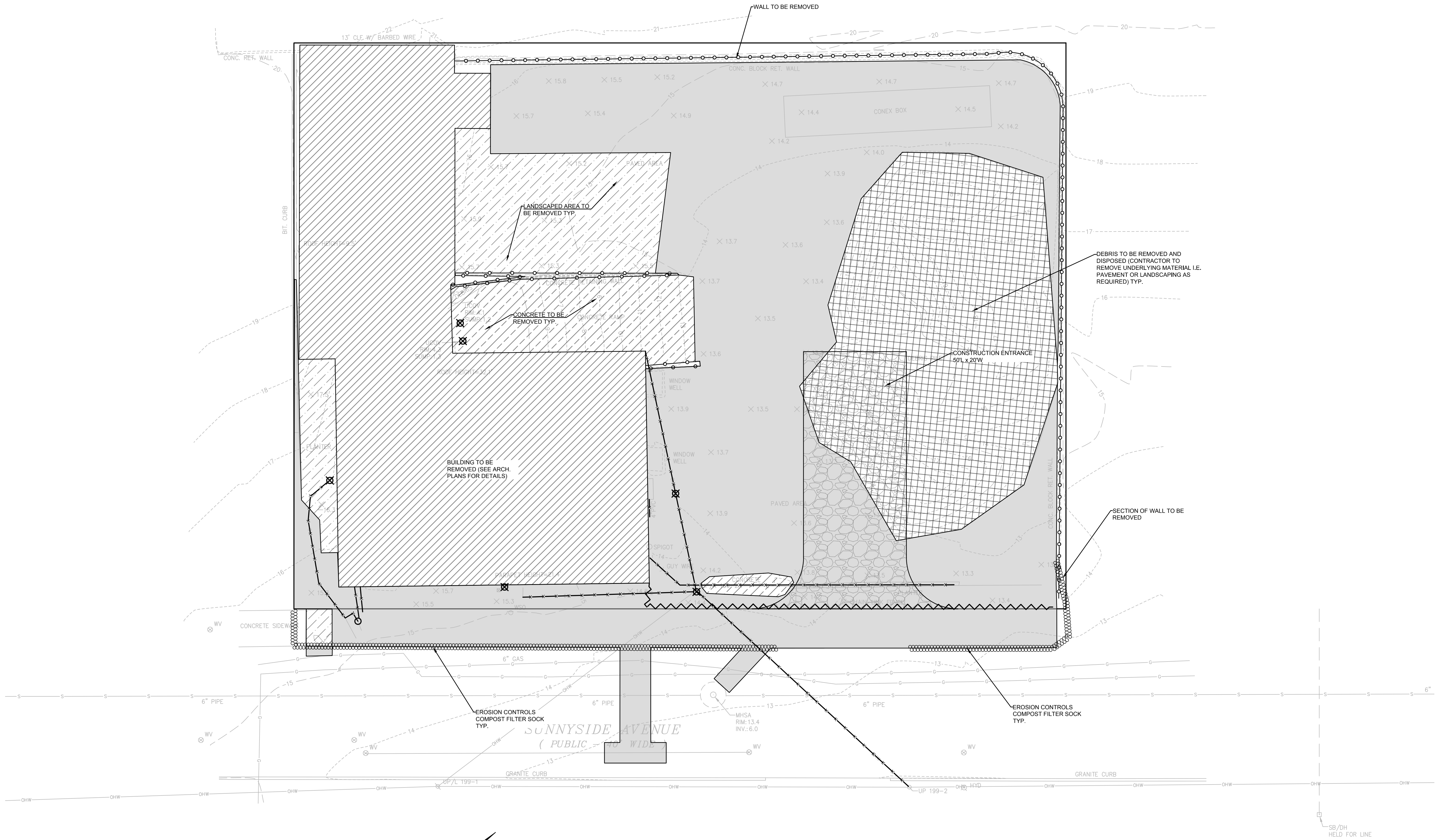
Designed By: ---	Drawn By: MWC	Checked By: CDE
Issue Date: 9/09/2022	Project No: 078306	Scale: 1" = 10'

Drawing No.:

SHEET 2 OF 2

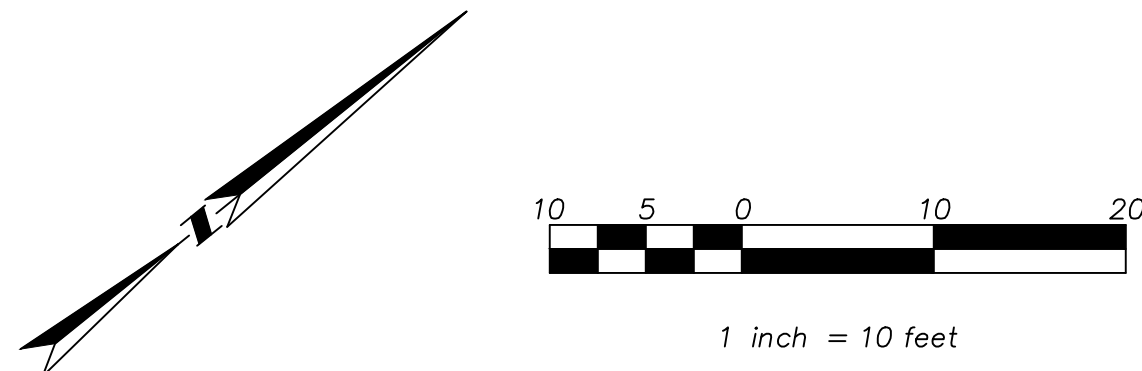
DEMOLITION LEGEND:

- BUILDING TO BE REMOVED
- BITUMINOUS CONCRETE TO BE REMOVED/PULVERIZED
- DEBRIS TO BE CLEARED
- CEMENT CONCRETE TO BE REMOVED
- AREA OF LOAM REMOVAL
- FENCE REMOVAL
- WALL TO BE REMOVED
- UTILITIES LINE TO BE REMOVED
- LIMIT OF WORK
- EROSION CONTROL
- UTILITIES STRUCTURE TO BE REMOVED
- UTILITIES STRUCTURE TO BE ABANDONED IN PLACE



NOTE:
THE CONTRACTOR SHALL PHASE ALL
DEMOLITION AND REMOVAL WORK TO
ALLOW FOR THE CONTINUING OPERATION
OF ALL STRUCTURES OUTSIDE OF LIMIT OF
WORK.

NOTE:
DRAWING DOES NOT SHOW ENTIRE SCOPE
OF DEMO. IT IS INTENDED TO AID
CONTRACTOR WITH IDENTIFYING WORK
AND IS NOT ALL INCLUSIVE.



10 SUNNYSIDE
AVE.

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474

PROJECT

Housing Corporation of
Arlington

252 MASSACHUSETTS AVE.
ARLINGTON, MA 02474
P 781.899.5294 F 000.000.0000

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STAMP

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03/09/2023	COMPREHENSIVE PERMIT

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SCALE
1" = 10'

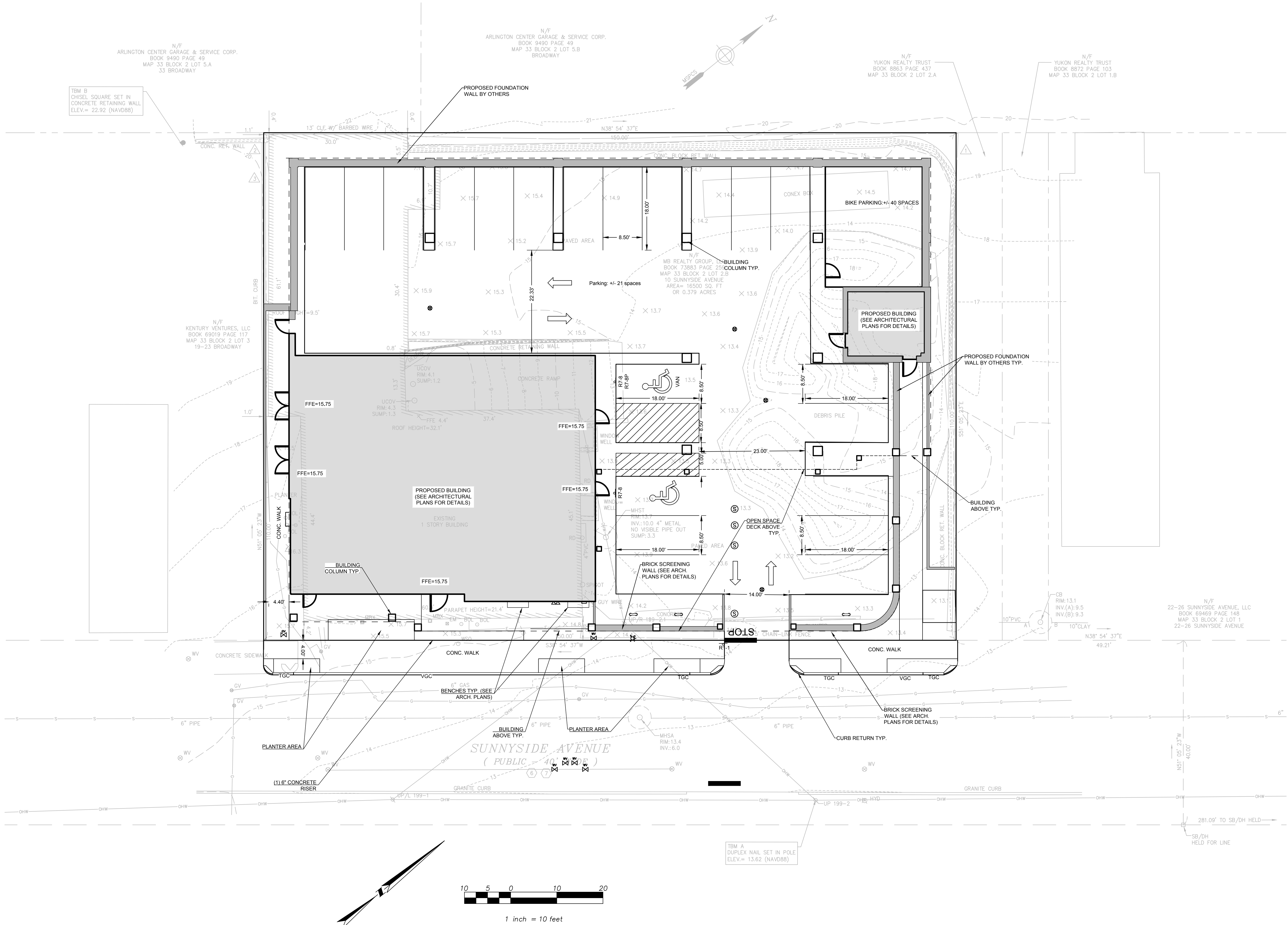
UTILITE PROJECT NUMBER
Arlington, MA

SITE PREPARATION
AND EROSION
CONTROL PLAN

C1.00

LEGEND:

FGC	PROPOSED FLUSH GRANITE CURB
VGC	PROPOSED VERTICAL GRANITE CURB
---	LIMIT OF WORK
+	PROPOSED SIGN
---	OVERHEAD BUILDING LOCATION



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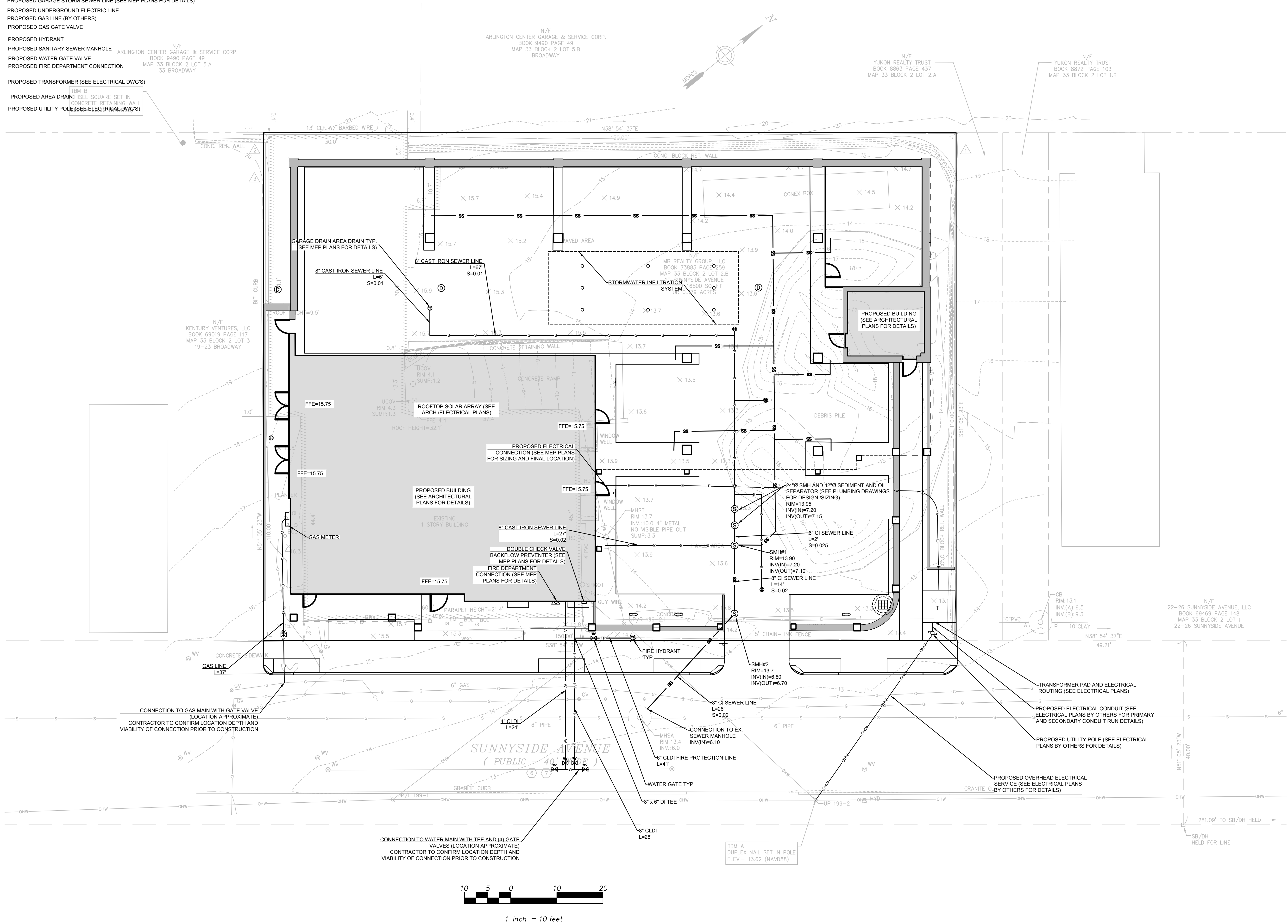
UTILE PROJECT NUMBER
Arlington, MA

SITE LAYOUT
PLAN

C2.00

LEGEND:

- W --- PROPOSED WATER LINE
--- FP --- PROPOSED FIRE PROTECTION LINE
--- SS --- PROPOSED SANITARY SEWER LINE (SEE MEP PLANS FOR DETAILS)
--- S --- PROPOSED GARAGE STORM SEWER LINE (SEE MEP PLANS FOR DETAILS)
--- E --- PROPOSED UNDERGROUND ELECTRIC LINE
--- G --- PROPOSED GAS LINE (BY OTHERS)
--- G --- PROPOSED GAS GATE VALVE
--- SMH --- PROPOSED HYDRANT
--- T --- PROPOSED SANITARY SEWER MANHOLE
--- T --- PROPOSED WATER GATE VALVE
--- T --- PROPOSED FIRE DEPARTMENT CONNECTION
--- T --- PROPOSED TRANSFORMER (SEE ELECTRICAL DWG'S)
--- T --- PROPOSED AREA DRAIN (SEE ELECTRICAL DWG'S)
--- T --- PROPOSED UTILITY POLE (SEE ELECTRICAL DWG'S)



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SCALE	UTILITY PROJECT NUMBER
1" = 10'	Arlington, MA

SITE UTILITY
PLAN

C3.00

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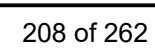
SCALE
1" = 10'

UTILE PROJECT NUMBER Arlington, MA

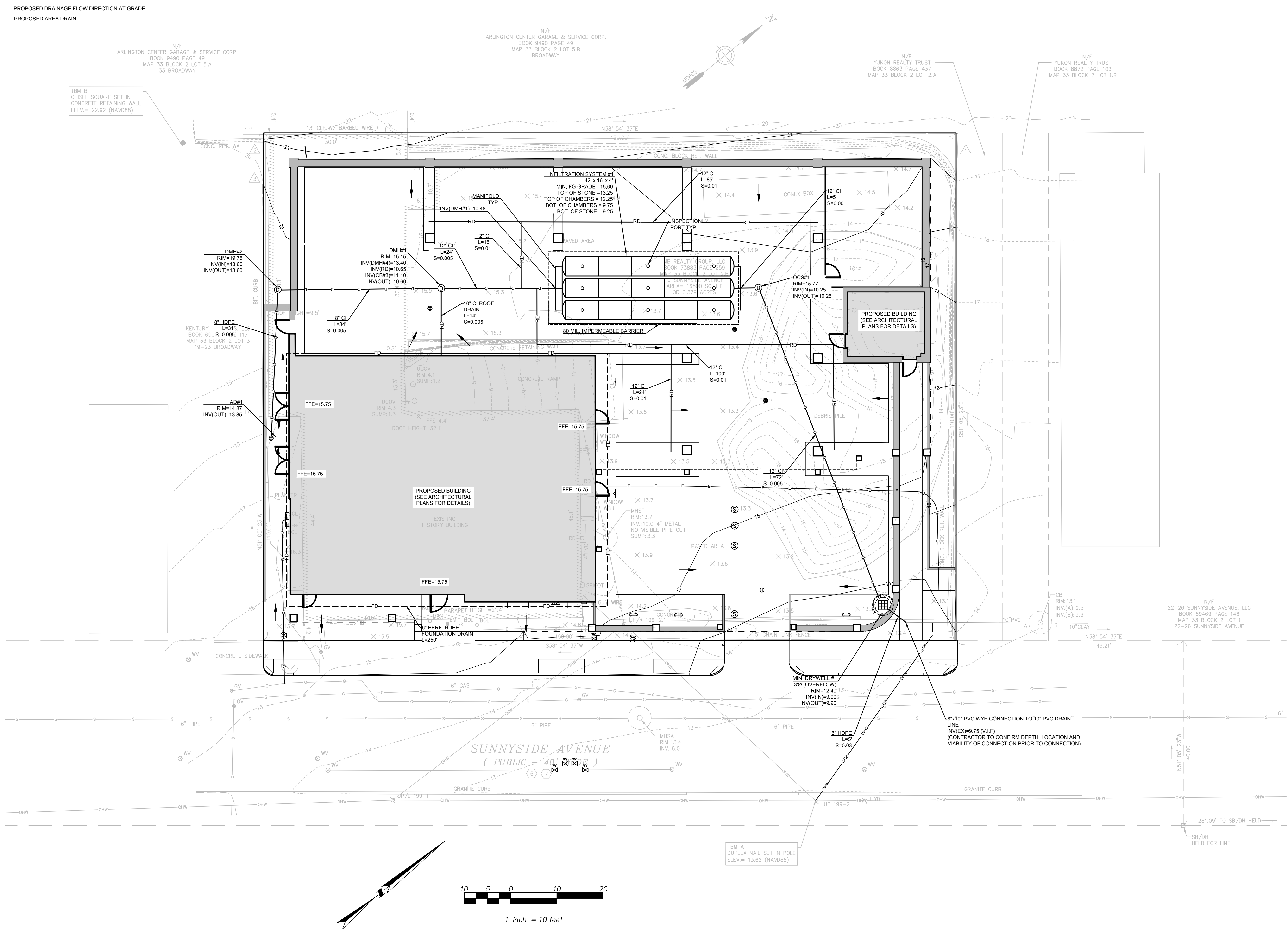
GRADING PLAN

C4.00

11/8/2022 1:21:43 PM



- LEGEND:**
- D — PROPOSED STORM DRAINAGE LINE
 - RD — PROPOSED ROOF DRAIN LINE (SEE MEP PLANS FOR DETAILS)
 - FD — PROPOSED FOUNDATION DRAIN LINE
 - ⊙ DMH PROPOSED STORM DRAINAGE MANHOLE
 - ⊞ CB PROPOSED CATCH BASIN
 - ⊙ PROPOSED DRYWELL W/ GRATE
 - PROPOSED DRAINAGE FLOW DIRECTION AT GRADE
 - PROPOSED AREA DRAIN



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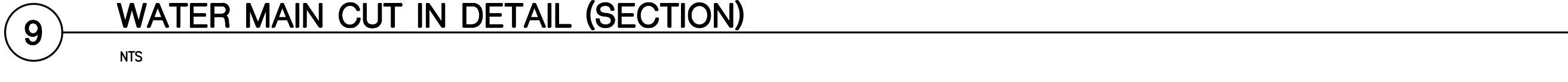
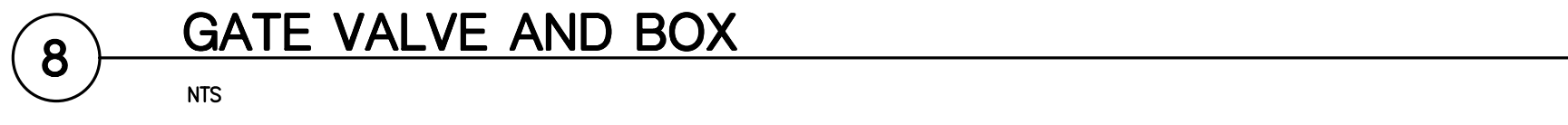
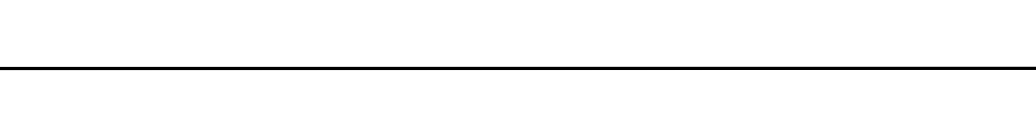
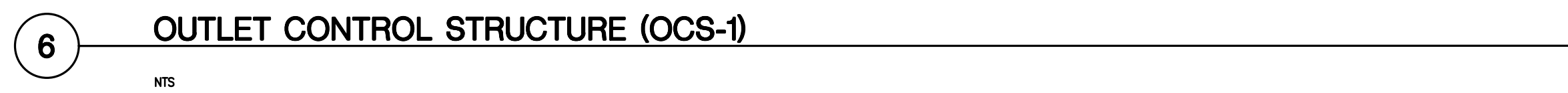
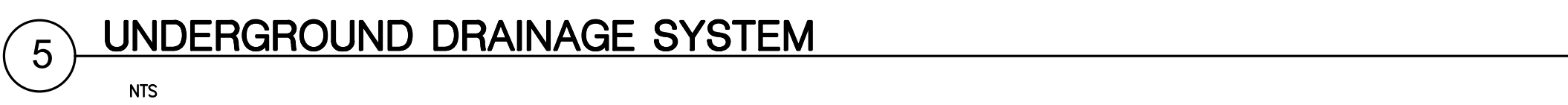
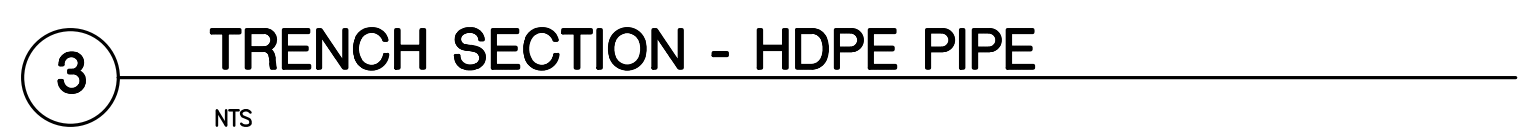
REVISIONS ON SHEET

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1" = 10'

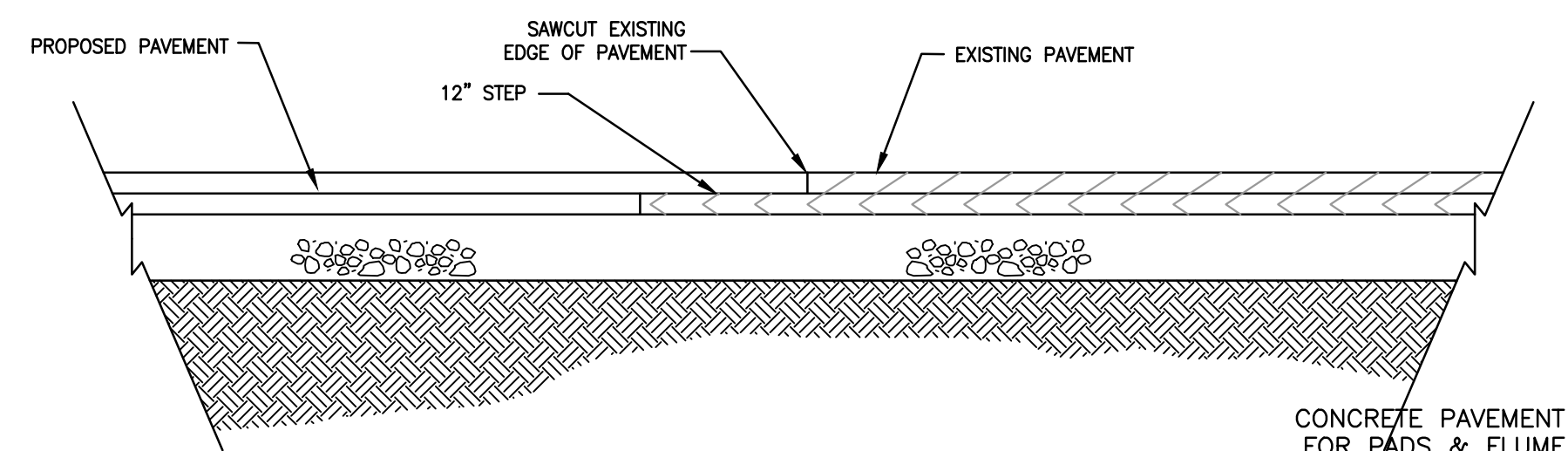
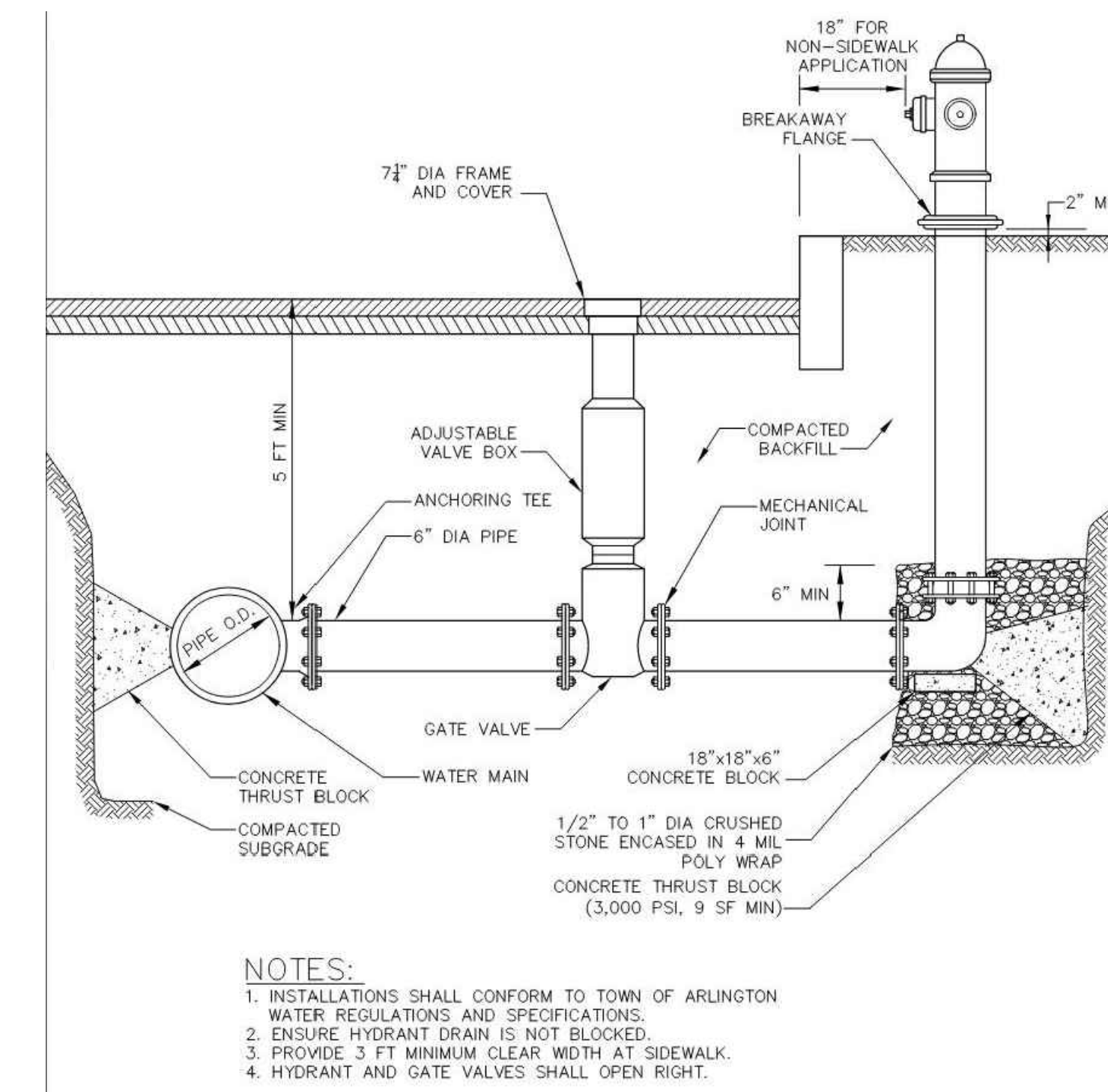
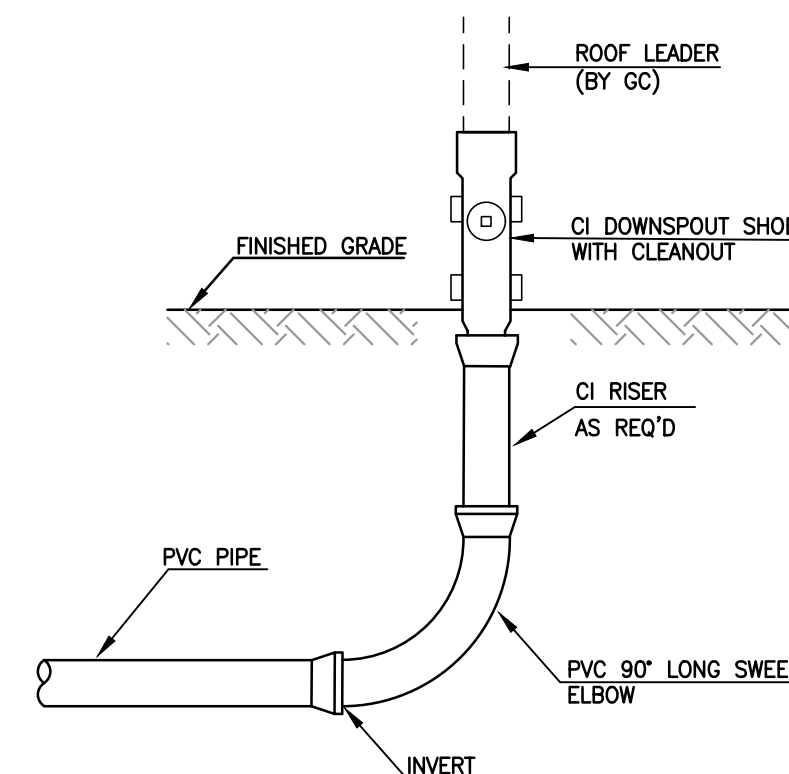
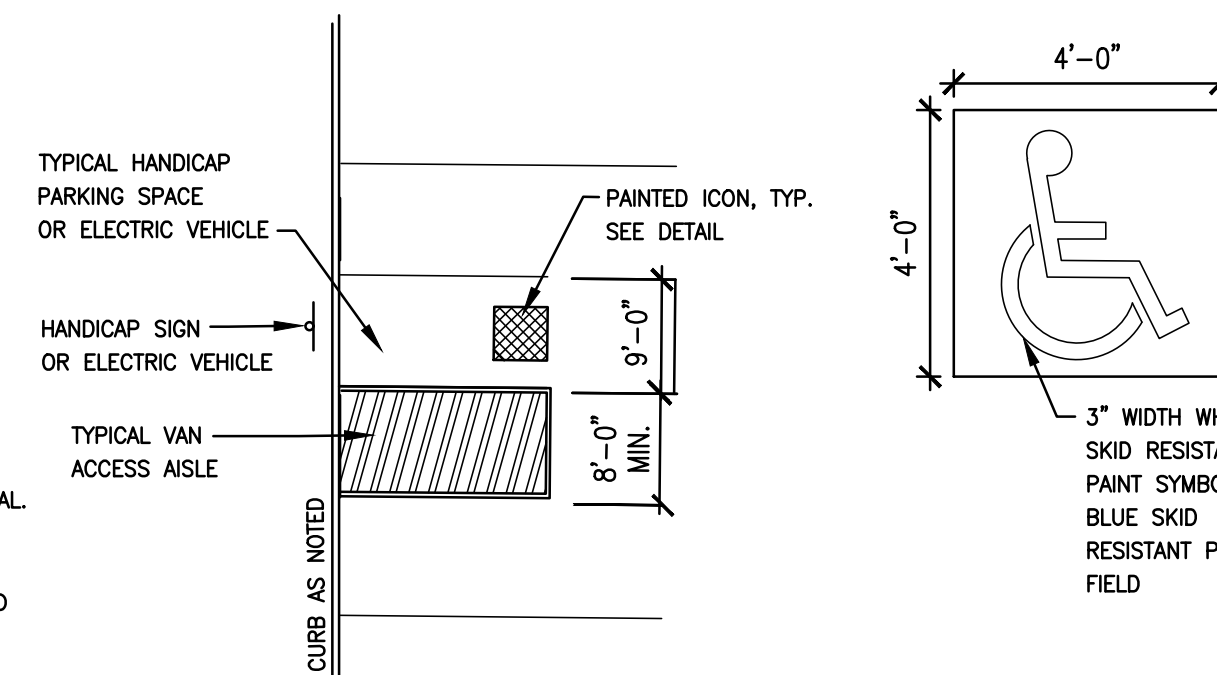
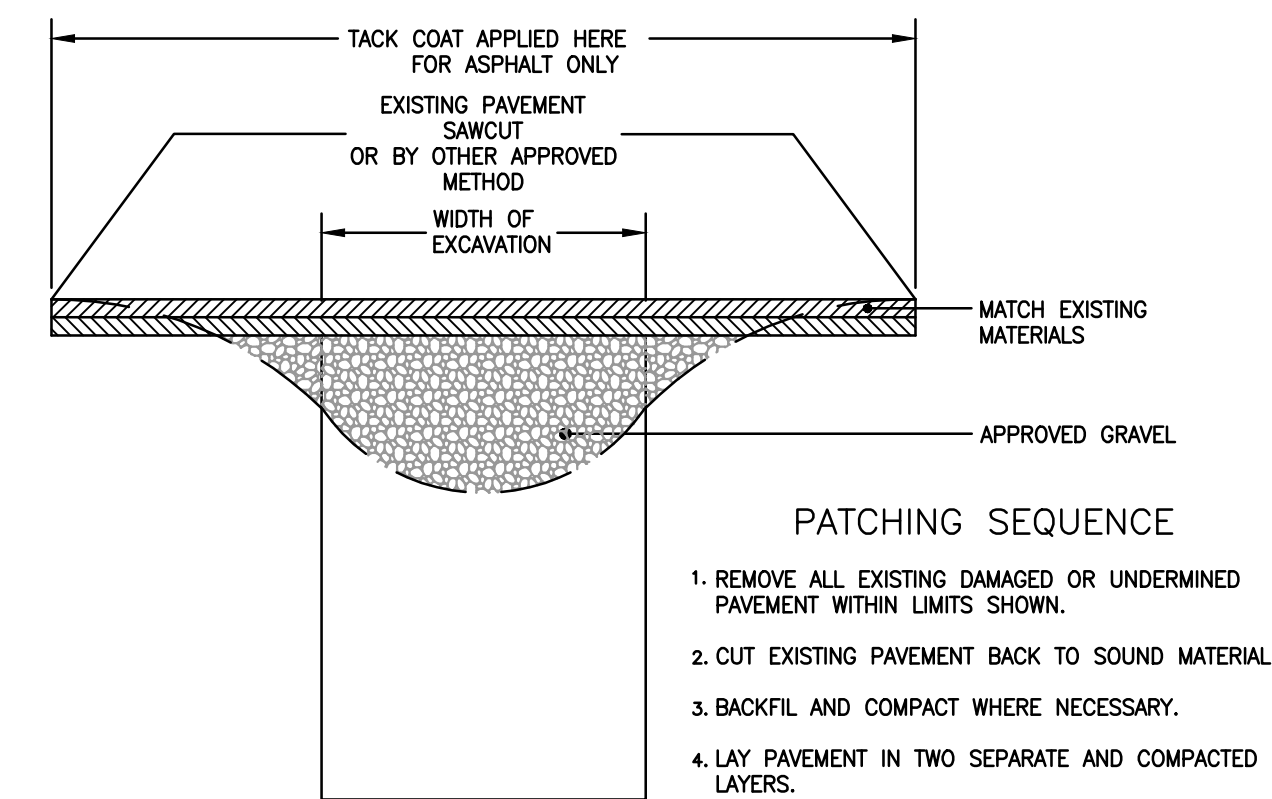
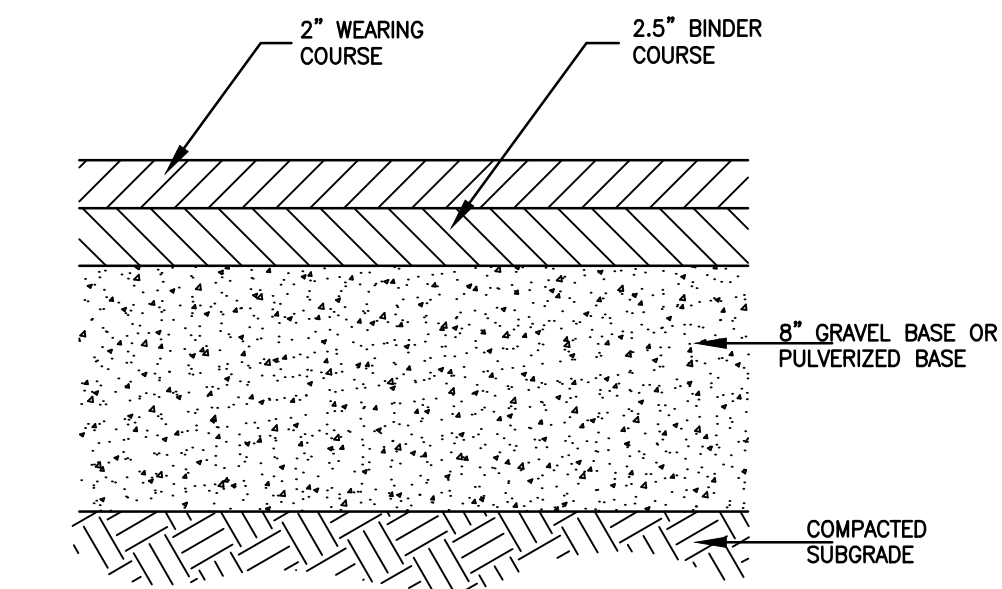
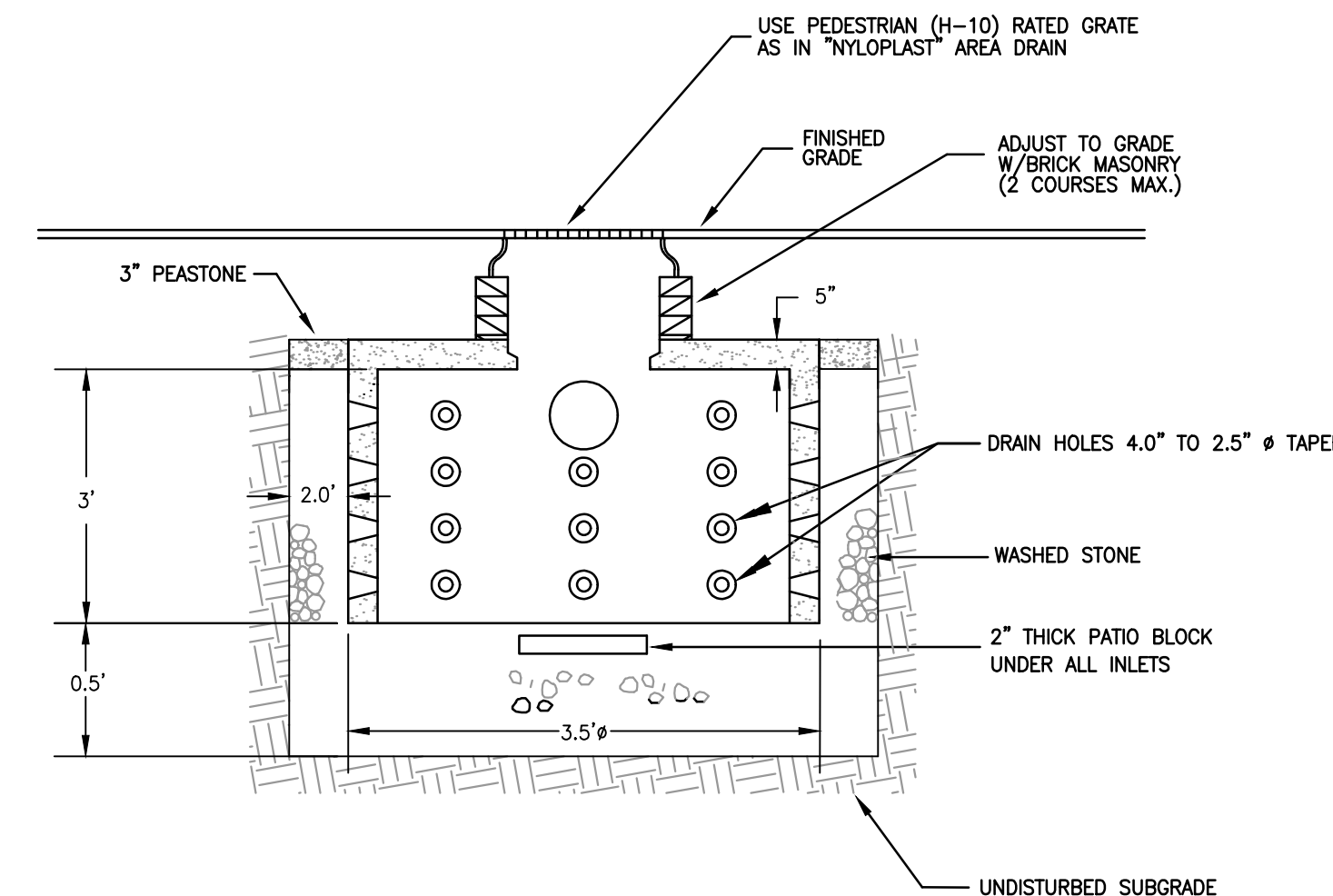
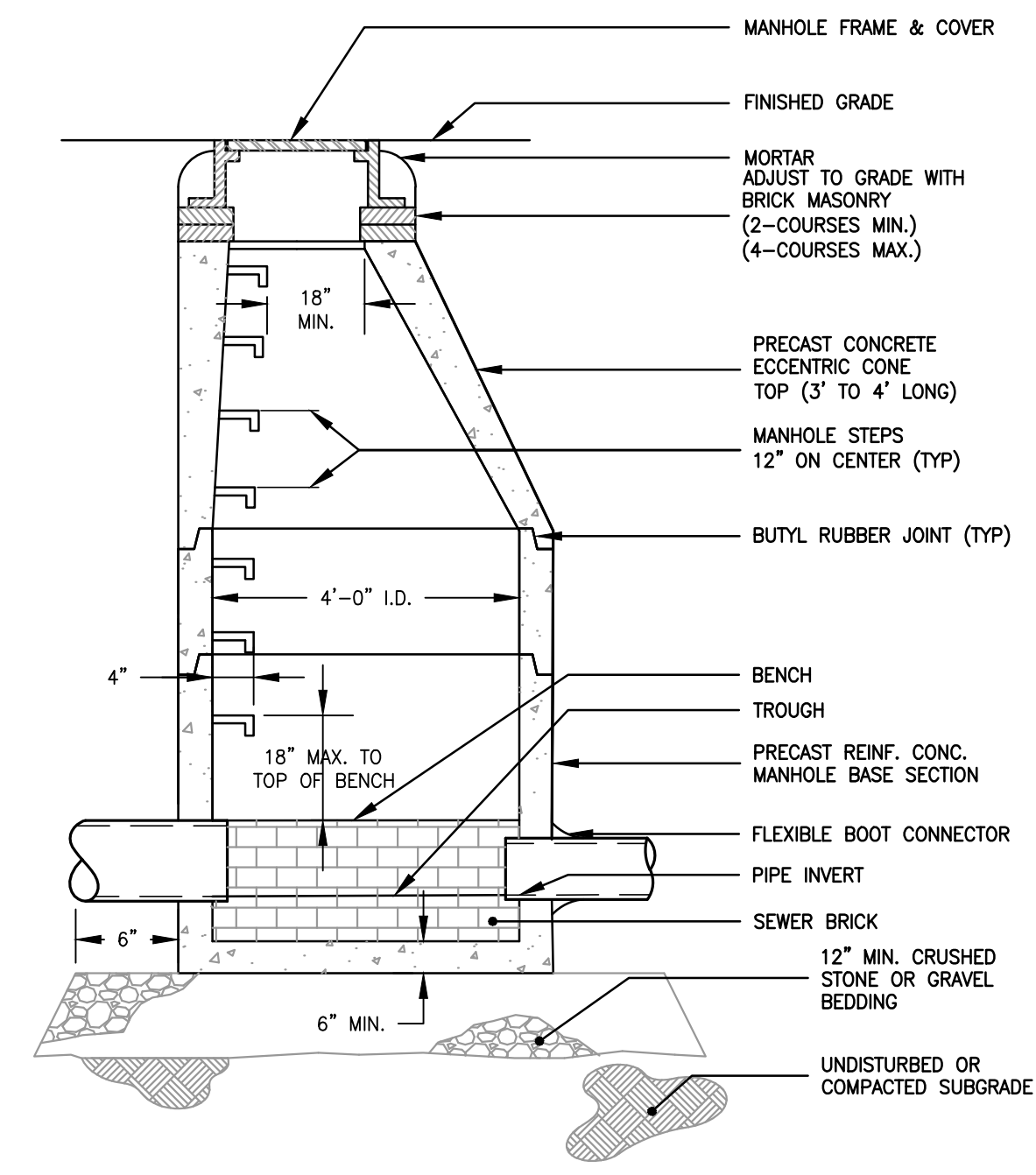
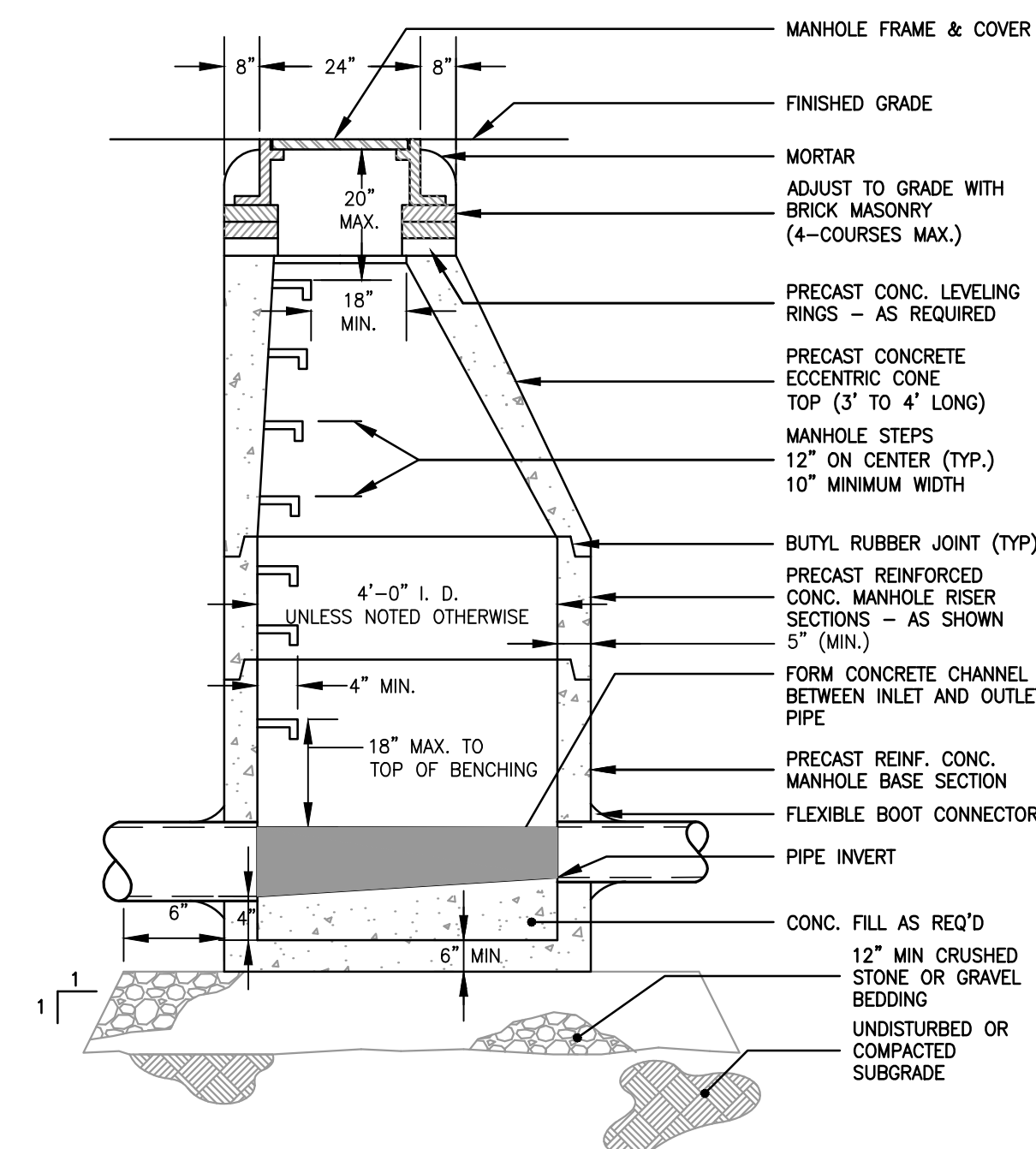
UTILE PROJECT NUMBER
Arlington, MA

**STORMWATER
MANAGEMENT
PLAN**

C5.00



C6.00



10 SUNNYSIDE
AVE.

10 SUNNYSIDE AVE.
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PROJECT

Housing Corporation of
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252 MASSACHUSETTS AVE.
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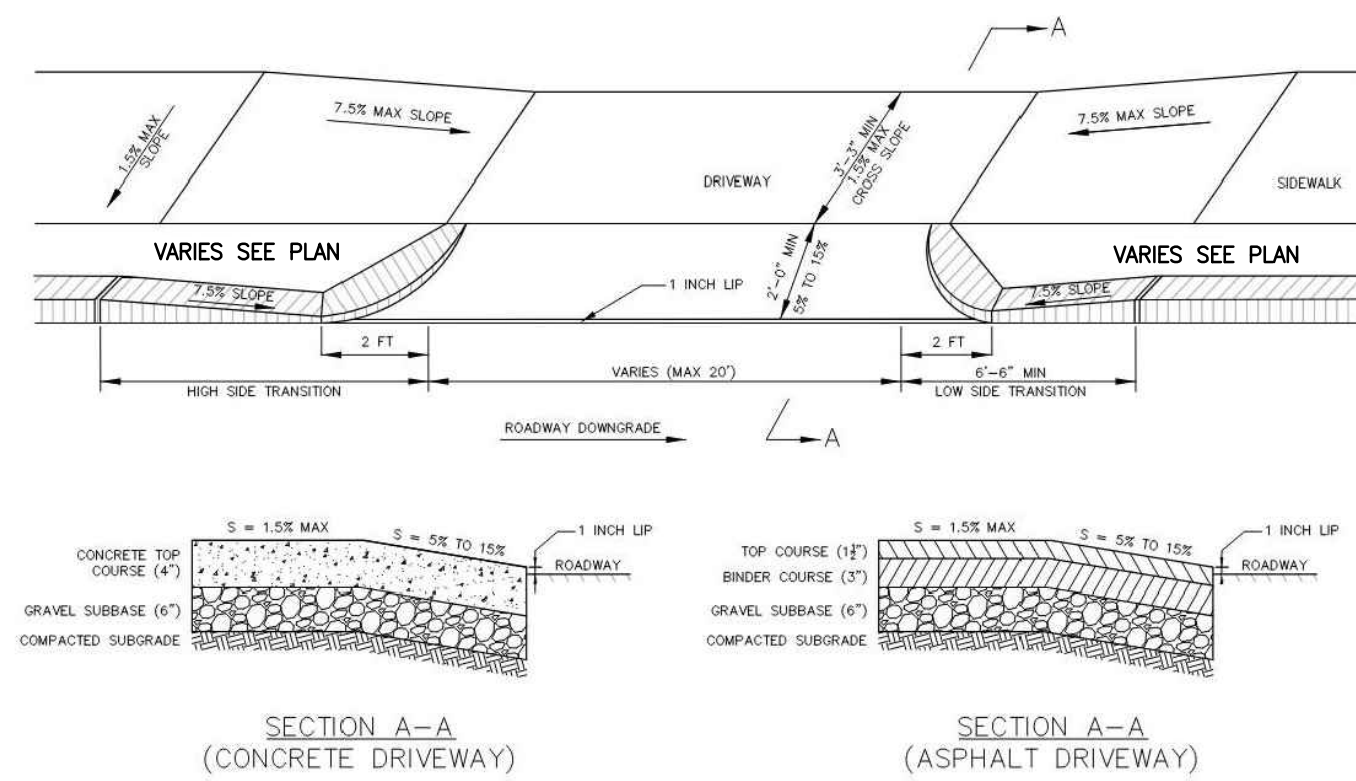
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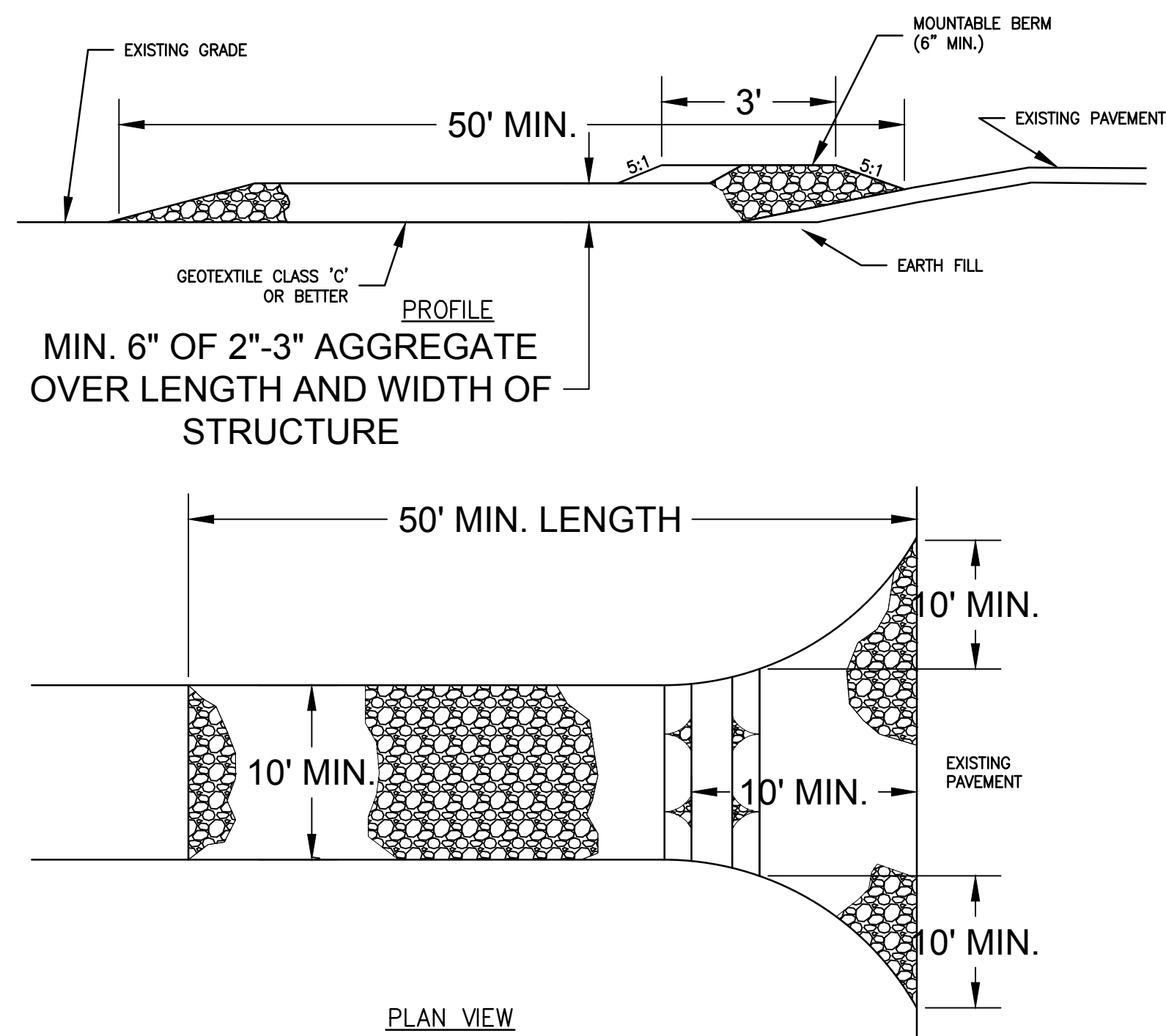
SCALE	UTILE PROJECT NUMBER
1" = 10'	Arlington, MA

CIVIL DETAILS

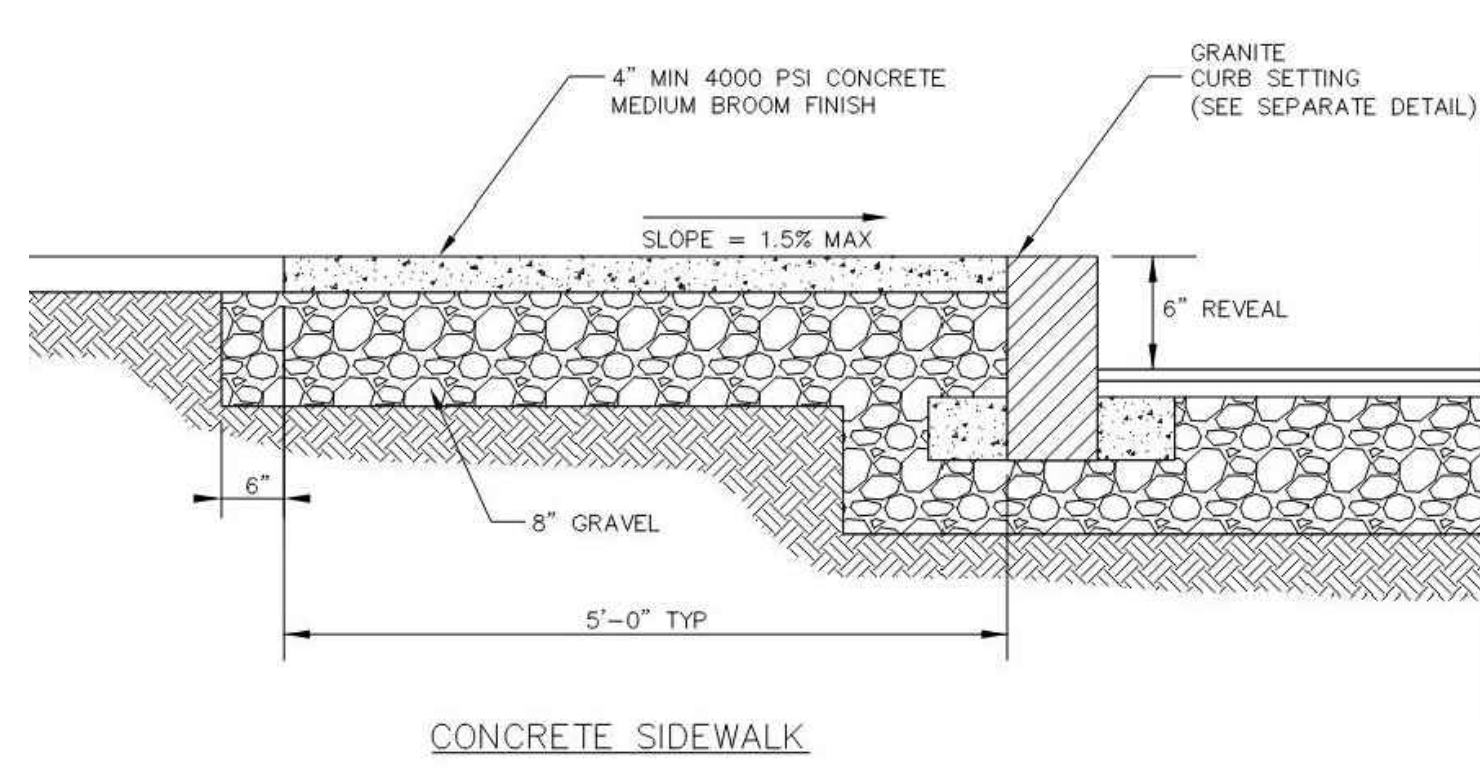
C6.01



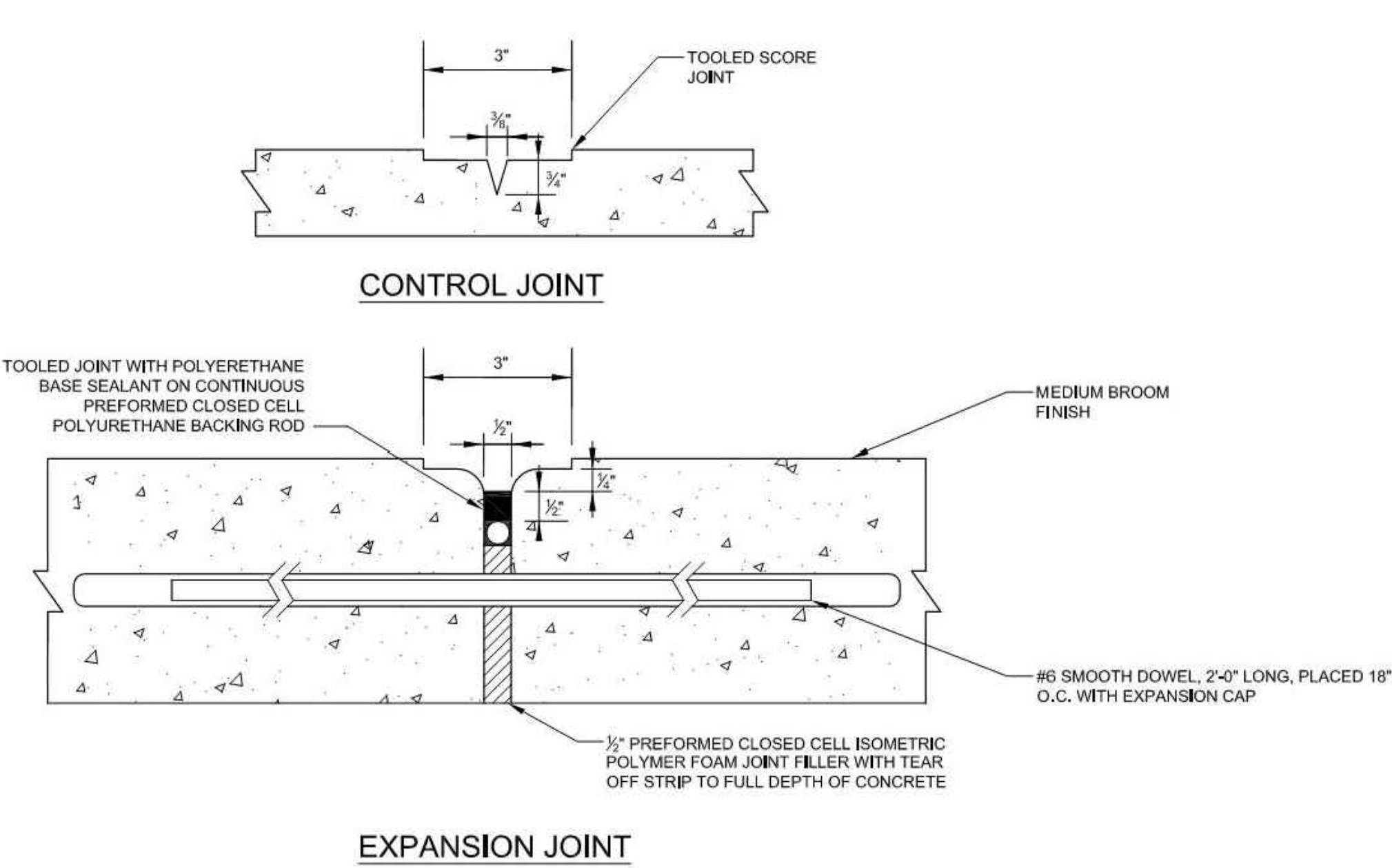
1 DRIVEWAY APRON (TOWN OF ARLINGTON STANDARD)



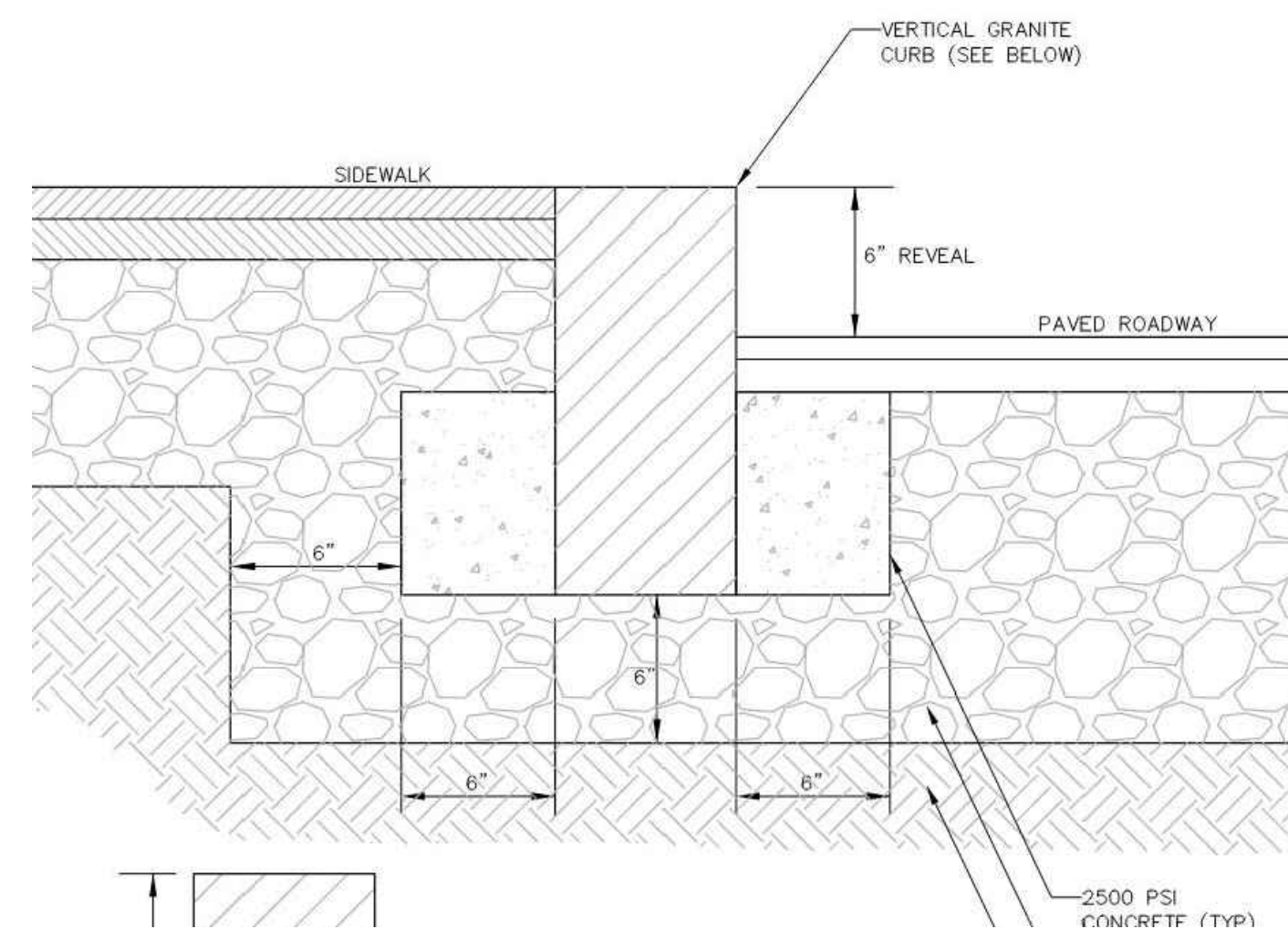
3 STABILIZED CONSTRUCTION ENTRANCE



2 CONCRETE SIDEWALK



4 CONCRETE SIDEWALK JOINTS



5 VERTICAL GRANITE CURB

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SCALE 1" = 10' UTILE PROJECT NUMBER Arlington, MA

CIVIL DETAILS

C6.02



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SCALE 1/8" = 1'-0"	UTILE PROJECT NUMBER 2244
-----------------------	------------------------------

FLOOR PLAN - FIRST FLOOR

A1.01

3/9/2023 11:11:26 AM



10 SUNNYSIDE
AVE.

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SCALE
1/8" = 1'-0"

UTILITE PROJECT NUMBER
2244

FLOOR PLAN - SECOND
FLOOR

A1.02

WNER

ARCHITECT

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REVISIONS ON SHEET

A1.03

3/9/2023 11:11:43 AM



1 $\frac{L3}{1/8" = 1'-0"}$

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SCALE 1/8" = 1'-0"	UTILITE PROJECT NUMBER 2244
-----------------------	--------------------------------

FLOOR PLAN - FIFTH FLOOR

A1.05



1 L5
1/8" = 1'-0"

SCALE
1/8" = 1'-0"

UTILE PROJECT NUMBER
2244



- ELEVATION NOTES
- 1 4" PTD. FIBER CEMENT PLANK SIDING, VERTICAL
 - 2 6" PTD. FIBER CEMENT PLANK SIDING, HORIZONTAL
 - 3 PTD. FIBER CEMENT PANEL
 - 4A BRICK RUNNING BOND
 - 4B METAL SCREEN
 - 4C BRICK TEXTURED PATTERN
 - 5 OVERHEAD COILING DOOR TO MATCH ADJACENT METAL SCREEN
 - 6 METAL SCREEN RAILING
 - 7 CONCRETE RETAINING WALL
- A HIGH PERFORMANCE TRIPLE GLAZED UPVC WINDOWS
- B THERMALLY BROKEN ALUMINUM FRAME STOREFRONT SYSTEM
- C EXTERIOR HOLLOW METAL SERVICE DOOR

1 EAST ELEVATION (SUNNYSIDE AVE)
1/8" = 1'-0"

10 SUNNYSIDE AVE.

10 SUNNYSIDE AVE.
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PROJECT

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SCALE	UTILE PROJECT NUMBER
1/8" = 1'-0"	2244

EXTERIOR ELEVATION - EAST
(SUNNYSIDE AVE)

A3.00



ELEVATION NOTES

- 1 4" PTD. FIBER CEMENT PLANK SIDING, VERTICAL
 - 2 6" PTD. FIBER CEMENT PLANK SIDING, HORIZONTAL
 - 3 PTD. FIBER CEMENT PANEL
 - 4A BRICK RUNNING BOND
 - 4B METAL SCREEN
 - 4C BRICK TEXTURED PATTERN
 - 5 OVERHEAD COILING DOOR TO MATCH ADJACENT METAL SCREEN
 - 6 METAL SCREEN RAILING
 - 7 CONCRETE RETAINING WALL
- A HIGH PERFORMANCE TRIPLE GLAZED UPVC WINDOWS
- B THERMALLY BROKEN ALUMINUM FRAME STOREFRONT SYSTEM
- C EXTERIOR HOLLOW METAL SERVICE DOOR

1 WEST ELEVATION (REAR)
1/8" = 1'-0"

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1/8" = 1'-0"	2244

EXTERIOR ELEVATION - WEST
(REAR)

A3.01



1 SOUTH ELEVATION
1/8" = 1'-0"

- ELEVATION NOTES
- 1 4" PTD. FIBER CEMENT PLANK SIDING, VERTICAL
 - 2 6" PTD. FIBER CEMENT PLANK SIDING, HORIZONTAL
 - 3 PTD. FIBER CEMENT PANEL
 - 4A BRICK RUNNING BOND
 - 4B METAL SCREEN
 - 4C BRICK TEXTURED PATTERN
 - 5 OVERHEAD COILING DOOR TO MATCH ADJACENT METAL SCREEN
 - 6 METAL SCREEN RAILING
 - 7 CONCRETE RETAINING WALL
- A HIGH PERFORMANCE TRIPLE GLAZED UPVC WINDOWS
- B THERMALLY BROKEN ALUMINUM FRAME STOREFRONT SYSTEM
- C EXTERIOR HOLLOW METAL SERVICE DOOR

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ARCHITECT

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20 A STREET
FRAMINGHAM, MA 01701
P 508.877.6686

CIVIL

BF&A

17 BRIAN ROAD
LANCASTER, MA 01523
P 978.870.4301

CODE

BLW ENGINEERS

311 GREAT ROAD
P.O. BOX #1551
LITTLETON, MA 01460
P 978.486.4301

M/E/P/FP

STAMP

DATE	ISSUE / REVISION
03/09/2023	COMPREHENSIVE PERMIT

REVISIONS ON SHEET

SCALE 1/8" = 1'-0"	UTILE PROJECT NUMBER 2244
-----------------------	------------------------------

EXTERIOR ELEVATION -
SOUTH

A3.02

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474

Housing Corporation of
Arlington

252 MASSACHUSETTS AVE.
ARLINGTON, MA 02474
P 781.859.5294 F 000 000.0000

PROJECT

OWNER

115 KINGSTON ST
BOSTON, MA 02111
P 617 423.7200 F 617 423.1414
utiledesign.com

ARCHITECT

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SCALE
1/8" = 1'-0"

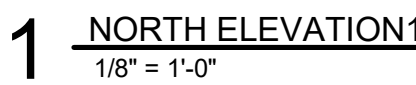
UTILE PROJECT NUMBER
2244

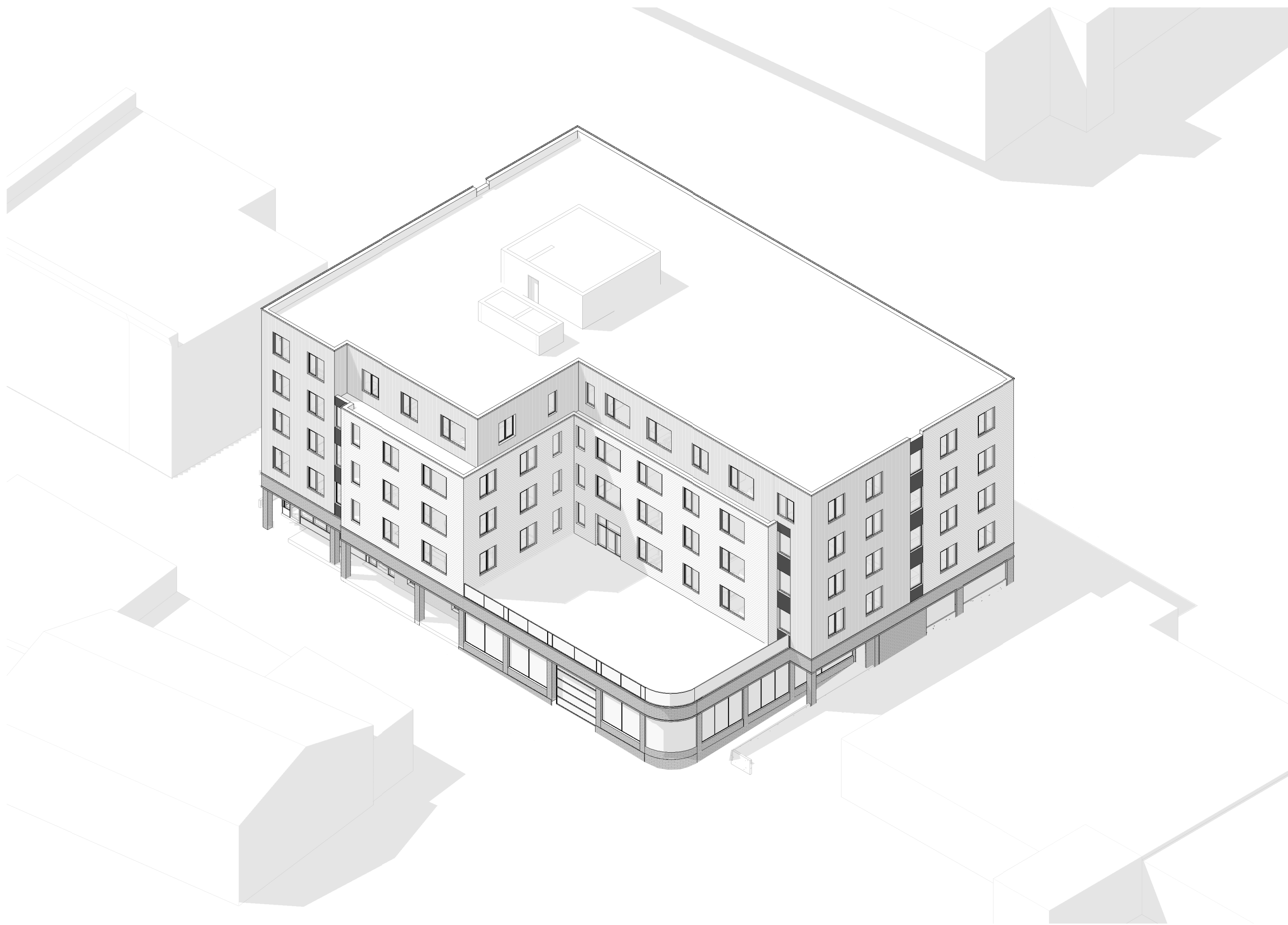
EXTERIOR ELEVATION -
NORTH

3/9/2023 11:16:25 AM

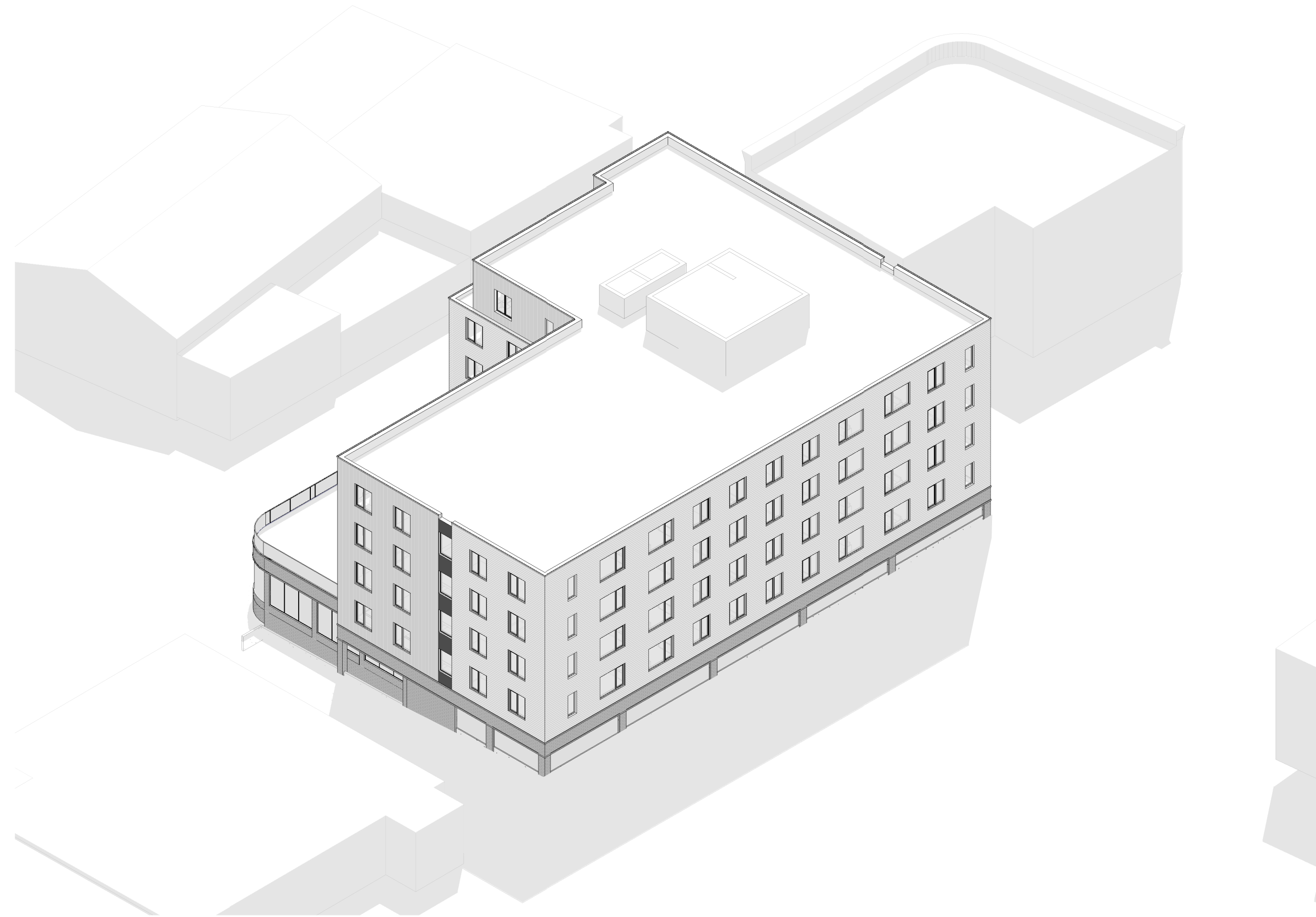
ELEVATION NOTES

- 1 4" PTD. FIBER CEMENT PLANK SIDING, VERTICAL
 - 2 6" PTD. FIBER CEMENT PLANK SIDING, HORIZONTAL
 - 3 PTD. FIBER CEMENT PANEL
 - 4A BRICK RUNNING BOND
 - 4B METAL SCREEN
 - 4C BRICK TEXTURED PATTERN
 - 5 OVERHEAD COILING DOOR TO MATCH ADJACENT METAL SCREEN
 - 6 METAL SCREEN RAILING
 - 7 CONCRETE RETAINING WALL
-
- A HIGH PERFORMANCE TRIPLE GLAZED UPVC WINDOWS
 - B THERMALLY BROKEN ALUMINUM FRAME STOREFRONT SYSTEM
 - C EXTERIOR HOLLOW METAL SERVICE DOOR

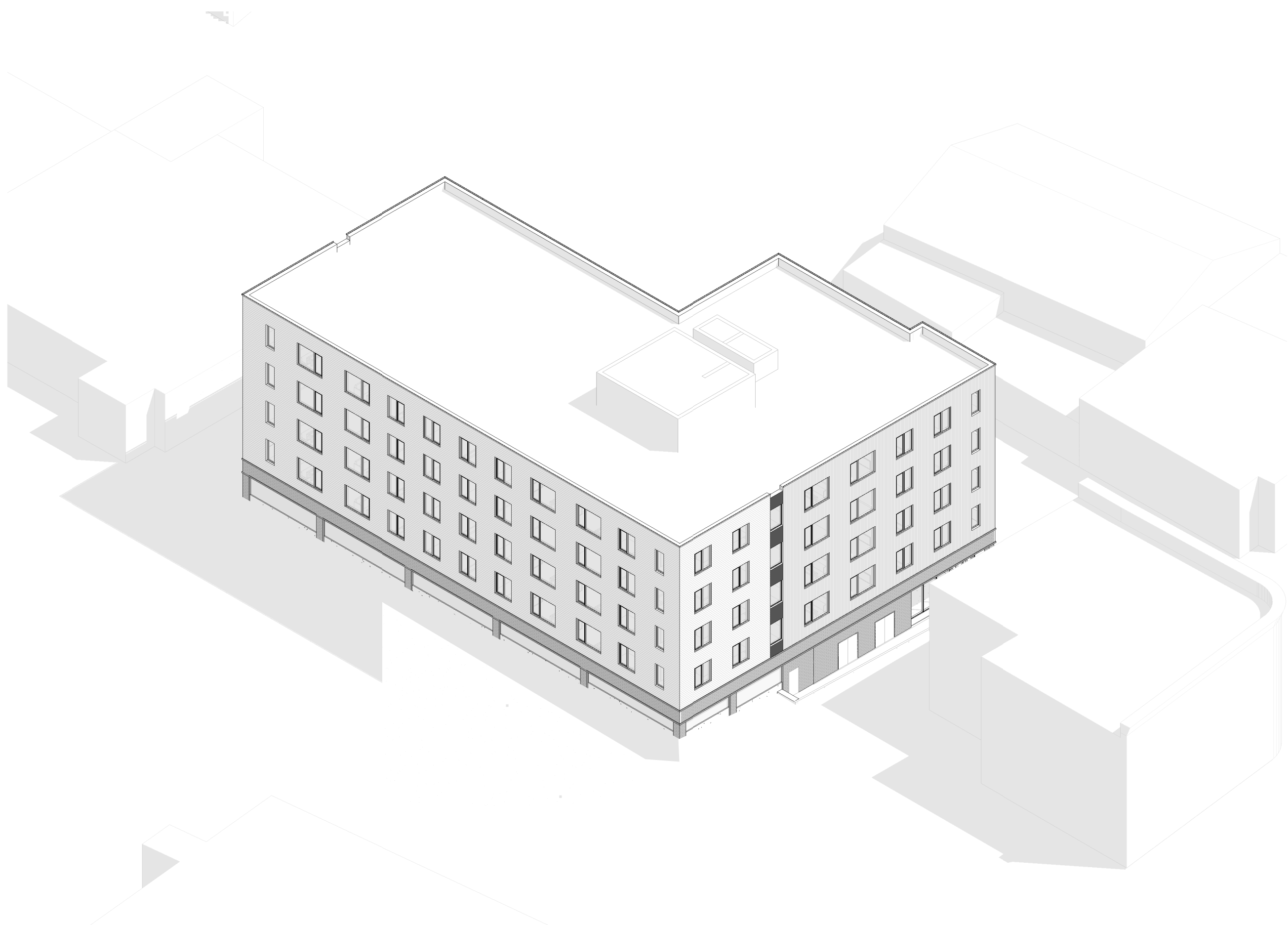




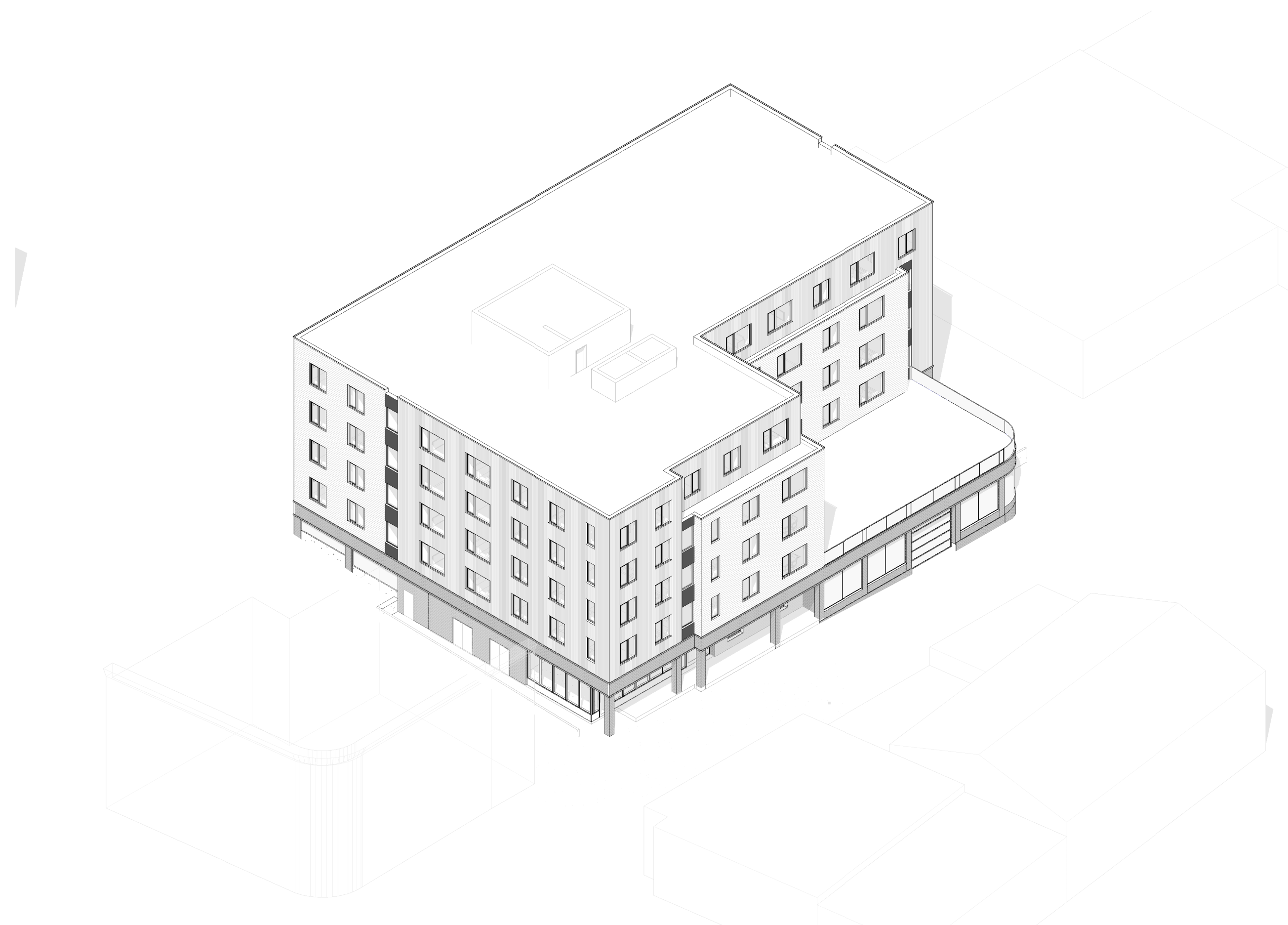
4 East Axon



3 North Axon



2 West Axon



1 South Axon

10 SUNNYSIDE AVE.

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474

PROJECT

Housing Corporation of
Arlington

252 MASSACHUSETTS AVE.
ARLINGTON, MA 02474
P 781.859.5294 F 000 000.0000

OWNER

utile
ARCHITECTURE + URBAN DESIGN

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CODE

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311 GREAT ROAD
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LITTLETON, MA 01460
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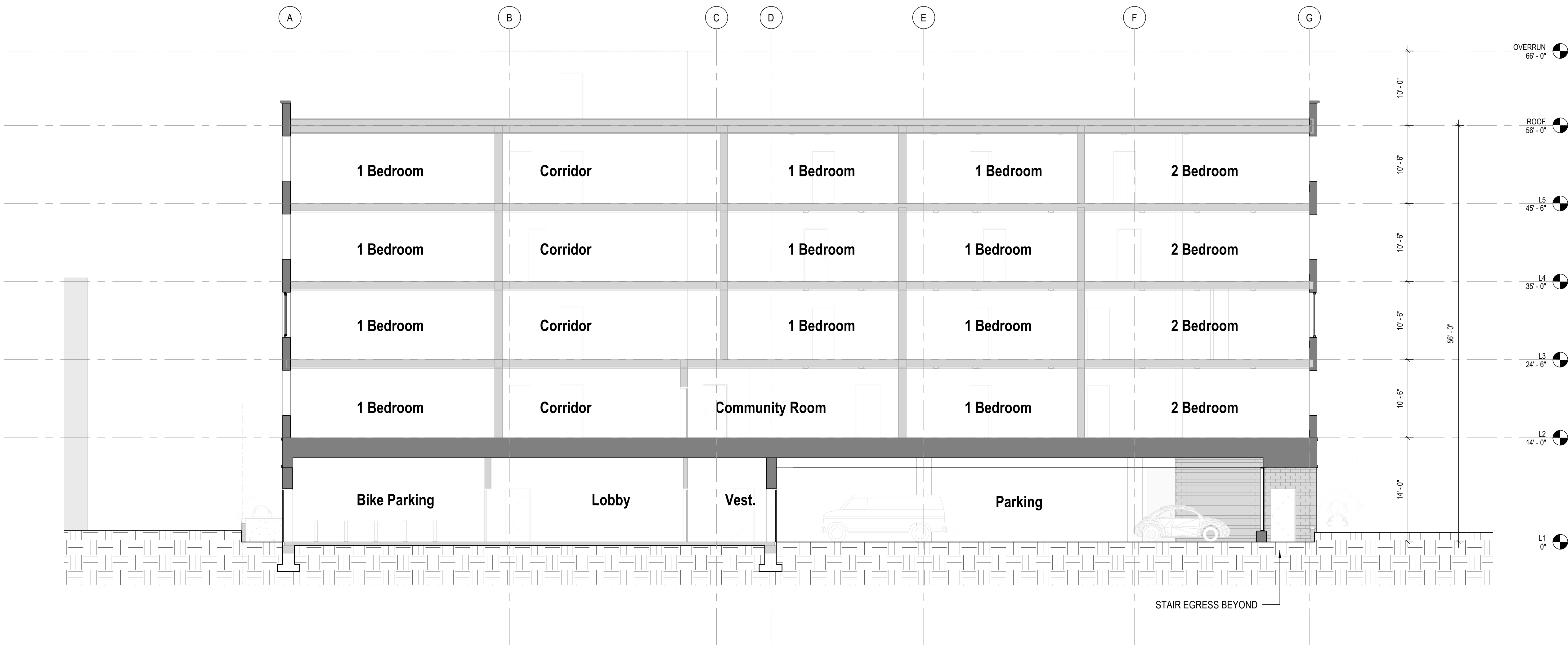
REVISIONS ON SHEET

SCALE

UTILITE PROJECT NUMBER
2244

BUILDING AXONS

A3.10



1 SECTION (EAST-WEST)
1/8" = 1'-0"

10 SUNNYSIDE AVE.

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474

PROJECT

Housing Corporation of
Arlington

252 MASSACHUSETTS AVE.
ARLINGTON, MA 02474
P 781.859.5294 F 000.000.0000

OWNER

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SCALE
1/8" = 1'-0"

UTILE PROJECT NUMBER
2244

BUILDING SECTIONS - E-W

A3.50



1 SECTION (NORTH-SOUTH)
1/8" = 1'-0"

10 SUNNYSIDE AVE.

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474

PROJECT

Housing Corporation of
Arlington

252 MASSACHUSETTS AVE.
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SCALE	UTILE PROJECT NUMBER
1/8" = 1'-0"	2244

BUILDING SECTIONS - N-S

A3.51

A letter in support of affordable housing at 10 Sunnyside Ave., Arlington, MA

From:

Harry Manasewich

11 Peirce St.

#1

Arlington, MA 02476

Date: 4-19-2023

To Whom it may Concern:

I am a senior and have lived in Arlington for over 30 years. I am concerned about the lack of affordable housing in our town and believe it is in the best interest of the town to approve the above noted project. Arlington has only 6% of its housing stock restricted to be "affordable". More affordable housing is needed to meet the needs of people that live or would like to live in Arlington. Seeing more affordable housing created is important to me because, had it not been for the creation of affordable housing by the Housing Corporation of Arlington (HCA), I would not have been able to continue to live in Arlington.

I support HCA's proposal for 10 Sunnyside Ave because it would provide greatly needed affordable housing. I believe the height and density of the building is appropriate as well as the setbacks, including the tradeoff of open space when considering the benefit of creating more affordable housing. The ZBA SHOULD be approving proposals like this that meet verified public need.

I hope the ZBA will approve the zoning for this development. Thank you.



TOWN OF ARLINGTON
DEPARTMENT OF PLANNING and
COMMUNITY DEVELOPMENT

TOWN HALL, 730 MASSACHUSETTS AVENUE
ARLINGTON, MASSACHUSETTS 02476
TELEPHONE 781-316-3090

MEMORANDUM

To: Christian Klein, Chair, Zoning Board of Appeals
Pat Hanlon, Vice Chair, Zoning Board of Appeals
Claire Ricker, Director, Department of Planning and Community Development

From: Kelly Lynema, Assistant Director

Date: April 24, 2023

RE: GLAM Projections

In light of the 3/20/2023 filing of a Comprehensive Permit Application by the Housing Corporation of Arlington (HCA), the Zoning Board of Appeals (ZBA) has asked for an informal assessment of Arlington's progress toward achieving a 1.5% General Land Area Minimum (GLAM). In 2021, DPCD worked with Arlington's GIS Administrator to review DHCD guidance on calculating the GLAM and identified current and projected percentages. This memo, largely based on that analysis, provides an overview of the background of 40B and GLAM calculations in Arlington, provides an estimate of the Town's current GLAM given recent additions to the Town's Subsidized Housing Inventory (SHI), and a recommendation for how the ZBA may wish to respond to this current Comprehensive Permit Application.

Background

In 1969, the state legislature adopted the Comprehensive Permit Statute under MGL Chapter 40B Sections 20-23 to "address the shortage of low- and moderate-income housing in Massachusetts and to reduce regulatory barriers that impeded the development of such housing." Subsequently, the Department of Housing and Community Development (DHCD) issued 760 CMR 56.00, which "set forth comprehensive standards and procedures" governing Comprehensive Permits, addressed the Subsidized Housing Inventory (SHI), and advanced the statutory purposes of MGL Chapter 40B Sections 20-23 "by clarifying the procedures of the expedited review process, and by otherwise addressing recurring questions of interpretation."

Section 56.03(3) of 760 CMR defines the methods by which a community can demonstrate progress toward local affordable housing goals. If one or more of the criteria described below are met, a municipality's Board of Appeals may invoke safe harbor, which thereby allows its board to deny a comprehensive permit or grant a permit with conditions. Reaching safe harbor precludes the Housing Appeals Committee (HAC) from overturning or modifying a board decision. The board may invoke safe harbor if:

1. The municipality can demonstrate that it has achieved one or more of the statutory minima:
 - a. 10% of all housing units are deed-restricted for occupancy by households earning an income at or below 80% of Area Median Income (AMI).

- b. 1.5% of the municipality's land area zoned for residential, commercial, or industrial use is dedicated for use as housing for households earning a low to moderate income.
2. The municipality has an approved Housing Production Plan certified by DHCD demonstrating its compliance with the goals of that plan by increasing the supply of SHI eligible housing units by at least 0.5% of its total units in a calendar year¹.
3. The municipality can demonstrate recent progress toward the statutory minima by having created affordable housing comprising at least 2% of its total housing units in the prior 12 months.

SHI eligible housing units may be counted toward these criteria if they have been inventoried by DHCD, or if they are established according to 760C CMR 56.03(3)(a) as occupied, available for occupancy, or under permit as of the date when the ZBA receives a Comprehensive Permit Application. However, if more than one year passes between the date when the ZBA issues a Comprehensive Permit or zoning approval for a 40B project and the date when a building permit is issued, the units fall off the SHI and they do not contribute toward the minima until a building permit is issued. Additionally, if more than 18 months pass between the date of the building permit issuance and the issuance of a certificate of occupancy, the units do not contribute to the SHI until the date the certificate of occupancy is issued.

At present Arlington's SHI represents 6.54% of total housing units, well below the 10% statutory minimum. The 2015 Master Plan suggested that the Town was potentially closer to achieving the 1.5% GLAM than the 10% statutory minimum and recommended that the Town work to determine its status under the Chapter 40B 1.5% land rule. The first recommendation in the Housing and Residential Development section of the Master Plan is for Arlington to plan for housing with a Housing Production Plan.

In September 2016, Arlington Land Realty (ALR) submitted a comprehensive permit application to build a 219-unit project on a parcel of land off Dorothy Road. In October the ZBA invoked safe harbor—stating that it believed the Town had been protected on the grounds that the Town had reached the 1.5% GLAM. After ALR notified DHCD of its objection to the ZBA's position, DHCD issued a determination that the Town had not reached the 1.5% GLAM. The ZBA appealed, stating that based on internal calculations the Town had achieved a GLAM of 1.53%.

In subsequent hearings on the matter, GIS experts from the Town and ALR described how they arrived at their respective GLAM calculations. In 2019, after hearing testimony on the individual calculations, the HAC concluded that the ZBA had not established the Town had achieved the 1.5% statutory minimum and denied its claim that the Town was entitled to safe harbor. The table below outlines these calculations, including the figures factoring into the HAC's decision.

¹ Meeting this requirement provides safe harbor only temporarily. If the municipality can demonstrate production of SHI eligible housing units at a rate of 0.5%, it can decline comprehensive permits for 40B developments for up to one year; if a rate of 1% can be demonstrated, it can decline them for up to two years. This was accomplished in 2021 after the ZBA issued a Comprehensive Permit for 1165R Massachusetts Avenue, which allowed the Town to certify the 2016 HPP from September 17, 2021 through September 16, 2022.

2019 HOUSING APPEALS COMMITTEE DECISION			
	Town (ZBA)	Arlington Land Realty	Housing Appeals Committee
Numerator			
SHI eligible land area	30.14	30.14	30.14
Denominator			
Total Municipal Area		3509.86	3509.87
Water Body Area (acres)		-224.95	-224.95
Right of Way Area (acres)		-726.28	-726.28
Total Zoned Included Land	2556.59	2558.63	2558.63
Exclusions ²	-588.88 ³	-361.77	-361.77
Total Eligible Land Area	1967.71	2196.86	2196.86
GLAM			
GLAM	1.53%	1.37%	1.37%

An Estimate of Arlington's Current GLAM

Since the HAC's 2019 decision, several small-scale developments that include units of deed-restricted affordable housing, the mid-sized Downing Square/Broadway Initiative, and the Comprehensive Permit Application for 1165R Massachusetts Avenue have been approved and are under construction (see Appendix A). Additionally, a Comprehensive Permit Application has been filed for 1021-1027 Massachusetts Avenue. The latter does not yet count toward the GLAM, as staff do not begin the process of requesting units be added to the Town's SHI until a building permits have been pulled for a project. DPCD has been asked for an assessment of the degree to which those developments would contribute to the GLAM.

In the time since Arlington's GLAM was last calculated, DHCD issued new guidance for calculating the GLAM⁴. This guidance varies from and supersedes the approach applied in the 2019 HAC decision in that each of the guideline's instructions builds on the preceding instruction, thereby reducing the likelihood of a land area being double counted (e.g., double counting the path for the Minuteman Bikeway as both right of way and open space). As such, the denominator (Total Land Area) is larger than was identified in the 2019 HAC analysis. The guidance also provides specific definitions for what areas of a development parcel may be counted as "directly associated" with that development and what does not contribute toward the GLAM. Land area available for parking, circulation, and open space is directly associated, while areas such as wooded hills and wetlands do not contribute toward the GLAM. As a result, some figures in the calculation provided below differ slightly from those provided to the HAC in 2019⁵.

² The following uses are excluded from the calculation: land owned by the state or federal government; land where residential, commercial, and industrial development has been prohibited by order of the Department of Environmental Protection; water bodies; and flood plain, conservation, or open space zone where residential, commercial, or industrial uses are completely prohibited.

³ HAC determined that the ZBA had excluded acreage associated with Arlington's water bodies twice in its calculation.

⁴ Guidelines for Calculating General Land Area Minimum: <https://www.mass.gov/service-details/guidelines-for-calculating-general-land-area-minimum>

⁵ The 2019 HAC decision describes how ALR's expert witness disputed the Town's numerator of 30.14, suggesting that a Board had claimed as SHI eligible a property of .189 acres that was not listed on the SHI.

Using the DHCD GLAM guidelines, in 2021 staff worked with Arlington’s GIS administrator to determine the Town’s current and projected GLAM as shown in the following table.

2022 GLAM ESTIMATE		
	1: 2019 Adjusted GLAM (per DHCD Guidelines)	2: 2022 Estimated GLAM based on current SHI
Numerator		
Group homes ⁶ (acres)	1.11	1.11
SHI eligible land area (acres)	28.84	30.69
<i>Total</i>	29.95	31.8
Denominator		
Total Area (acres) ^{7, 8}	2206.5	2206.5
GLAM		
<i>GLAM</i>	1.36%	1.44%

Staff Recommendations

Based on these figures, staff recommend that the ZBA does not attempt to invoke safe harbor in response to new Comprehensive Permit Applications, or at a minimum, postpone any decision to invoke safe harbor until after such time when any developments that include affordable housing have been issued building permits and receive a certificate of occupancy.

Given that the Fair Housing Action Plan and 2022 Housing Production Plan (HPP) clearly state goals of increasing the Town’s supply of affordable housing, including housing for families and seniors, the ZBA may wish to consider endorsing a voluntary goal of meeting the 10% statutory minimum instead of focusing exclusively on achieving the 1.5% GLAM. The 2022 HPP has been approved by DHCD; with an approved HPP, the Town can apply to have the HPP certified by DHCD if Arlington adds affordable housing at an annual rate of 0.5% or 1% of its year-round housing stock (99 or 199 units). This was recently accomplished in 2021 after the ZBA’s approval of the Comprehensive Permit Application for 1165R Massachusetts Avenue, which resulted in the certification of the 2016 HPP and granted the ZBA one year of temporary safe harbor, which ended in September of 2022. If the current HPP is able to be certified in the future, the ZBA would then have the option to decline to issue comprehensive permits for Chapter 40B developments without fear of being overturned by the HAC for a period of one or two years, respectively. This would be in coordination with the Town’s efforts to increase the supply of affordable housing outside of 40B applications, such as through implementation of the Fair

⁶ Estimated using DHCD’s 2016 data. The Town receives data on the number of group homes as part of DHCD’s annual SHI information, however their location, and therefore land area, is confidential. DHCD shares group home land area only when municipalities elect to calculate their GLAM in response to a Comprehensive Permit Application.

⁷ Non-zoning restrictions such as conservation restrictions, easements, or deed restrictions do not qualify as eligible rationale for exclusion.

⁸ Private Right-of-ways were not identified in the GIS parcel data (see step 2.8) for this preliminary and estimated calculation and should be included in the final calculation. In the GIS parcel data, all ROWs are combined and the official road list in Engineering should be used to separate public from private and paper ROW in GIS. The Town’s GIS administrator used the SAMIS Pavement Management data and created buffers for each Private, Paper, and Unknown road class and used the stated width to create the buffer.

Housing Action Plan, the 2022 HPP, and the work of the Affordable Housing Trust Fund Board of Trustees.

Appendix A | Affordable Housing Developments Added to the SHI Since 2019

The developments identified below were included in calculations of the Town's estimated GLAM. The unit at 483 Summer Street was added to the Town's SHI in 2020 but was not included in the 2019 HAC decision.

Properties added to the SHI since the last calculation of the GLAM

483 Summer St	Private Developer	Completed, one of nine units affordable
19R Park Ave	Housing Corp. of Arlington	Under construction, 100% affordable
117 Broadway	Housing Corp. of Arlington	Under construction, 100% affordable
1165R Mass Ave	Private Developer	Under construction, 40B project, 25% affordable



TOWN OF ARLINGTON

DEPARTMENT OF PLANNING and
COMMUNITY DEVELOPMENT

TOWN HALL, 730 MASSACHUSETTS AVENUE
ARLINGTON, MASSACHUSETTS 02476
TELEPHONE 781-316-3090

MEMORANDUM

To: Zoning Board of Appeals
From: Kelly Lynema, Assistant Director, Department of Planning and Community Development
cc: Applicant, 10 Sunnyside Avenue
Date: April 23, 2023
RE: 1021-1027 Massachusetts Avenue Comments from Town Boards, Commissions, and Departments

To aid the Arlington Zoning Board of Appeals (ZBA) in their review of the Arlington Land Realty, LLC Application for a Comprehensive Permit to develop Thorndike Place, the Department of Planning and Community Development (DPCD) invited Town departments, boards, and commissions to provide comments and questions on the application materials.

At the ZBA's request, the DPCD solicited comments from the following: Affordable Housing Trust (Trust), Arlington Fire Department (AFD), Arlington Police Department (APD), Clean Energy Future Committee, Conservation Commission, Department of Public Works, Environmental Planner/Conservation Agent, Health Department/Board of Health, Redevelopment Board (ARB), Senior Transportation Planner, Town Engineer, Town Manager, Transportation Advisory Committee (TAC), Tree Committee, Tree Warden. Comments were received from all except AFD and APD. The Conservation Commission noted that the property is not under their jurisdiction, therefore they have no comments to provide. Comments from the Senior Transportation Planner and Affordable Housing Trust are forthcoming.

Below and attached to this memo are the collected comments. A summary of responses is indicated by topic below:

- 1. Design:** The applicant is proposing a five-story building with commercial space and parking on the ground level, and four floors of apartments above. Members of the ARB noted their support for this type of project in Arlington, both for its provision of necessary affordable housing and for revitalizing a former automotive site. The ARB felt that the massing was well-considered; the provision of the roof deck amenity above the parking garage in particular serves to break down the scale of the building.

The Board added that the overall size and scale are appropriate for the B4 zoning district and this particular location near Broadway.

Façade

- Consider repeating the windows on the front of the building along the front of the garage, or some other way of punching out the screening of the garage area to provide additional fenestration on the ground floor.
- The rear of the building lacks sufficient articulation. The ARB encouraged the architect to provide relief through façade differentiation, some applied element, change in materials (e.g., vertical paneling vs. monolithic elements), or carrying through the use of color such as applied on the front of the building.
- While the ARB appreciates that the building is light in color, they are interested in the use of color in a few areas (e.g., the stair), and would be interested in seeing that type of relief applied elsewhere to break down some of the more monolithic elements. The applicant may want to consider introducing color changes where cladding changes from horizontal to vertical and adjust the depth of the cornice to add a shadow line and add depth to the building.
- The ARB is concerned about the appearance of some of the screening on the garage between the brick bays and on the second floor guard rail, which reads like chain link on the renderings. The applicant is encouraged to consider a screening element that has more opacity and visibility to the interior space.

Commercial Space

- The ARB noted that 600 square feet is very small for a commercial space; if the space can't viably be leased as a commercial space or made larger to provide a more viable commercial space, the ARB recommended dedicating it as a programmable common area for residents. The ARB noted that 1,000 square feet is likely the minimum floor plate necessary to create a usable and rentable commercial space in this location.
- Another alternative would be relocating the common area to the first floor and moving meeting rooms and office spaces to the second floor and enlarge the commercial office space.
- If there is a tenant identified for the commercial space, the ARB noted that additional clarification on a sign band and/or recommended sign types should be requested.
- Additional differentiation between the lobby entrance and the entry to the commercial space should be provided, whether through lighting, sign treatment, or façade differentiation.

General Design Comments

- The ARB recommended adding lighting to the perimeter of the parking garage, as Sunnyside Ave is currently not well lit, noting that additional lighting would make this project a more family-friendly development.
- The ARB noted multiple areas dedicated to back of house, and questioned whether some could be removed or added back to the apartments for more living area.

2. **Affordable Housing:** Comments from the Affordable Housing Trust are anticipated the week of 4/24/2023.

- 3. Conservation and Environmental Amenities:** As noted above, the Conservation Commission commented that the property is not under their jurisdiction. The Tree Warden responded that he did not have any comments on the application. The Tree Committee noted the plans for some native trees to be planted along the sidewalk, and encouraged the applicant to specify shade trees for these locations and provide quantities sufficient to help mitigate the urban heat island effect in the project area.

The ARB noted that this street floods quickly and has a high water table. While this site is at a higher elevation than other areas of Sunnyside Avenue, the ARB asked whether the high water table was a factor considered in the design of the project.

Additionally, ARB noted the following:

- The Zoning Bylaw requires one public shade tree shall be provided every 25 linear feet of lot frontage along a public way. This should be required per Section 6.3.
- While the proposal has very little open space, the development's proximity to the Alewife Greenway, Waldo Park, and the second floor roof deck compensate for the lack of open space.

- 4. Parking, Circulation, Access, and Connections:** The TAC and the ARB provided a review of traffic, parking, and circulation and provided the following comments. Please also refer to the attached memorandum from TAC and the Town Engineer. As noted above, comments from the DPCD Sr. Transportation Planner, who begins employment with the Town on 4/24/2023, are forthcoming.

TAC provided recommendations for bus stop accessibility improvements at Broadway and Sunnyside. TAC also noted numerical discrepancies between the TIS and the site plan, provided clarification on span of service for bus route 87, and recommended factoring this project into corridor improvements.

The Town Engineer provided feedback on sidewalks and sewer via notes on the attached site plans and as summarized below:

Sidewalks

- A 5' minimum sidewalk width between the tree well and the building is required.
- Ensure that street tree plantings are in accordance with Town regulations and approved by the Tree Warden.
- The applicant should consider reducing impervious surface at the sidewalk by providing a continuous grass strip along the curb line.
- Consider providing some sort of pedestrian warning or notification where the sidewalk crosses the garage entrance.
- There may be a conflict between the proposed street trees and overhead wires.
- There may be some redundancy between the proposed hydrant on the plan right of the proposed building and adjacent services; a hydrant located across the street from the building and a fire connection located on the façade of the building less than 20 feet away from the proposed hydrant.

Sewer/Infrastructure

- Sewer line cleanout should be 10 feet from the building.
- Identify manholes on the site plan.
- Identify sump elevation.
- Identify the outlet for the foundation drain and elevations of the foundation drain.
- Call out DMH #4 and CB#3 on the site plan.
- At least one inspection port will be needed for the infiltration area.

Garage

- The ARB recommended specifying a quieter rolling grill used for the garage door to avoid disruptive noise during garage door operation.

Vehicular Parking

- The ARB noted that the application materials provide two different required parking amounts to be waived, and both figures are incorreced. For 43 units, under Section 8.2.4 there should be 43 minus 4 spaces required, as the applicant is entitled to a 10% reduction in parking for affordable housing. Under this calculation, the HCA would be requesting a 16 space parking reduction.

Bicycle Parking

- The ARB noted that the proposal includes much less bicycle parking than required and feels that this is a mistake, as the location is ideal for cyclists. The ARB recommended reducing the parking by one or two spaces in order to meet the bicycle parking requirements and provide additional space for stroller parking.

Traffic Impact Analysis

- The ARB noted that there was not a mode adjustment in the Traffic Impact Study due to the proximity of transit access in the area, and questioned whether this was an oversight or a conscious decision by the project team.

5. **Utilities:** Please refer to the attached comments and recommendations from the Town Engineer.
6. **Stormwater:** Please refer to the attached comments and recommendations from the Town Engineer.
7. **Public Health:** The Board of Health provided specific comments on trash storage and disposal, the project's HVAC system, and noise impact on future tenants from surrounding businesses. Please refer to the attached comments and recommendations for future details.

One ARB member noted that there was a release on the site reported to the Department of Environmental Protection around 20 years ago; while this was likely cleaned up in the intervening years, it is important that the HCA understand the status of the issue.

- 8. Sustainability:** The CEFC will vote on 4/28 to approve the following statement from the CEFC Chair: The HCA project's plan to pursue Passive House standards aligns with the Town's Net Zero Action Plan. Pursuit of Passive House would also fulfill the requirement of the State's new Specialized Stretch Code, which the Select Board has recommended that Town Meeting adopt this spring. The addition of solar PV to the HCA project further supports the Town's goals of maximizing local renewable energy production. Furthermore, the Stretch Code—automatically effective for Arlington's commercial buildings as of July 1, 2023—requires that 20% of parking spaces have wiring to support electric vehicle charging. HCA could clarify what electrical capacity there might be for future EV charging station expansion at 10 Sunnyside. Finally, HCA could clarify the fuel sources for heating, ventilation, and air conditioning (HVAC), water heating, and appliances. These systems ideally should be all electric to align with the Town's net zero goals or, if the systems are not all electric, pre-wiring should be provided for future electrification of these systems per the Specialized Stretch Code.

Overall, the provision of a 100% affordable housing development along a bus line and within walking/biking distance of multiple amenities is supported by the boards, commissions, and departments. The project fits well with the Master Plan goals of encouraging mixed-use development along Arlington's main commercial corridors and providing a variety of housing options for a range of incomes, ages, and needs.

As noted by several commenters, the service, time, and consideration of the ZBA is sincerely appreciated. Boards and departments were pleased to be asked to provide comments on what was seen as a positive addition to Arlington's housing supply. I am happy to coordinate with boards, commissions, and Town staff should the ZBA wish to ask additional questions pertaining to their respective areas of expertise.

Attachments:

- TAC Comments on 10 Sunnyside Comprehensive Permit Application, dated April 10, 2023
- Town Engineer comments as provided on site plans
- 10 Sunnyside Avenue Board of Health Comments, dated April 13, 2023



TRANSPORTATION ADVISORY COMMITTEE.

Arlington Planning Department, 730 Mass Ave,
Arlington MA

Date: April 10, 2023
To: The Department of Planning and Community Development
From: The Transportation Advisory Committee
Subject: Comments on 10 Sunnyside Ave Comprehensive Permit Application (40B)

RECOMMENDATIONS:

1. Make the bus stops at Broadway / Sunnyside handicap accessible. This will include installation of landing pads and a curb cut ramp to facilitate potential future installation of a marked crosswalk on the south side of Broadway, across from Sunnyside. (The nearest existing curb cut is the driveway to the cemetery, more than 200 feet away.)
2. Share the study with Somerville. DCR/Somerville recently received a State earmark to study improvements to the Broadway / Route 16 intersection.

COMMENTS:

3. From the standpoint of transit access, this is not a bad location for multi-family housing.
4. Section 1.2 of the TIS, it notes that there is a requirement for 9 parking spaces for 40 units, but does not mention parking for the commercial space, or if the commercial space will require handicap accessible parking. The TIS says there are 22 spaces and the site plan shows 21 spaces.
5. Section 3.3 of the TIS, two comments on transit
 - a. Span of service for bus 87 is less than that for the MBTA as a whole. Bus 87 does not have late evening or Sunday service in Arlington.
 - b. The Clarendon Hill busway is approximately 1000' (5 minute walk) from the project site. It offers several additional bus routes, including late evening and Sunday service
6. Both Somerville and Arlington are looking at the Broadway corridor; this project should be factored into proposed corridor improvements.

Below is a Google street view picture, facing east, of the Broadway/Sunnyside bus stop. This lightly used stop has several deficiencies: no nearby pedestrian crossing, no landing pad, and often not cleared of snow in the winter.



- LEGEND:
- FGC

PROPOSED FLUSH GRANITE CURB
- VGC

PROPOSED VERTICAL GRANITE CURB
- LIMIT OF WORK
- +

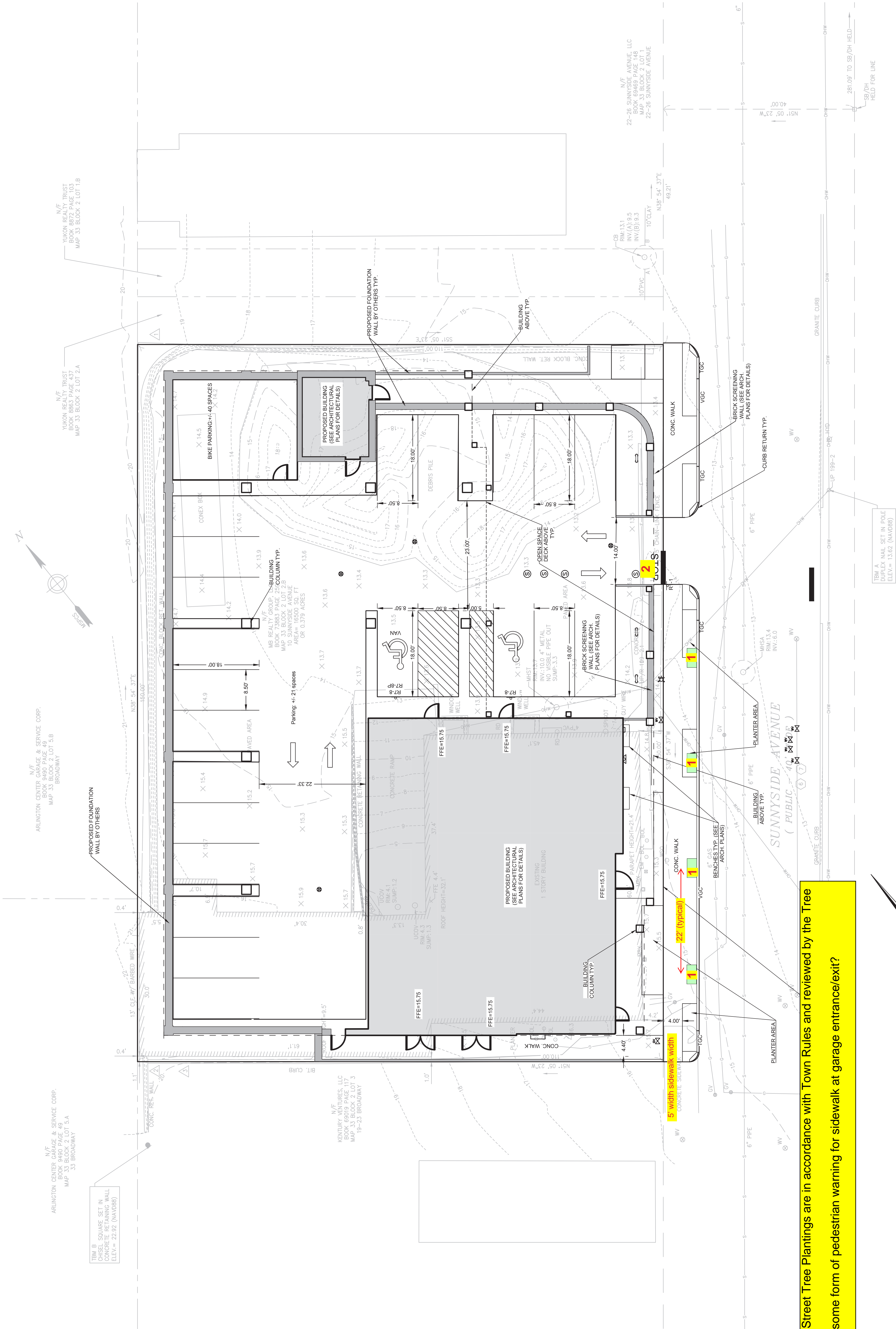
PROPOSED SIGN
- OVERHEAD BUILDING LOCATION

N/F
ARLINGTON CENTER GARAGE & SERVICE CORP.
BOX 9460 PAGE 1B
MAP 33 BLOCK 2 LOT 5.A
19-23 BROADWAY

TBM B
CHSEL SQUARE SET IN
CONCRETE
ELEV.= 22.92 (NAVD88)

N/F
ARLINGTON CENTER GARAGE & SERVICE CORP.
MAP 33 BLOCK 2 LOT 5.B
BROADWAY

N/F
YUKON REALTY TRUST
1000 STATE AVENUE
MAP 33 BLOCK 2 LOT 1.B



- 1) Ensure Street Tree Plantings are in accordance with Town Rules and reviewed by the Tree Warden
- 2) Provide some form of pedestrian warning for sidewalk at garage entrance/exit?

10 SUNNYSIDE AVE.

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474

PROJECT

Housing Corporation of
Arlington

252 MASSACHUSETTS AVE.
ARLINGTON, MA 02474
P 781.669.5294 000.000.0000

OWNER

utile
ARCHITECTURE + URBAN DESIGN

115 KINGSTON ST
ARLINGTON, MA 02461
P 617.423.7200 F 617.423.1414
utile.design.com

ARCHITECT

SAMIMOTES CONSULTANTS INC.

20 A STREET
FRAMINGHAM, MA 01701
P 508.871.6888

CIVIL

BF&A

17 BRIAN ROAD
LANCASTER, MA 01523
P 978.870.4301

CODE

BLW ENGINEERS

311 GREAT ROAD
P.O. BOX #151
LITTLETON, MA 01460
P 978.486.4301

MEPFP

STAMP

DATE
03/09/2023

ISSUE /REVISION

COMPREHENSIVE PERMIT

REVISIONS ON SHEET

SCALE
1" = 10'

UTILE PROJECT NUMBER
Arlington, MA

SITE LAYOUT
PLAN

C2.00

10 SUNNYSIDE AVE.

10 SUNNYSIDE AVE.
ARLINGTON, MA 02474

Housing Corporation of
Arlington

252 MASSACHUSETTS AVE.
ARLINGTON, MA 02474
P 781.659.5284 F 000.000.0000

OWNER

utile

ARCHITECTURE + URBAN DESIGN

115 KINGSTON ST.
ARLINGTON, MA 02461
P 617.423.7200 F 617.423.1444
utile.design.com

ARCHITECT

SAMIOTES CONSULTANTS INC.

20 A STREET
CAMBRIDGE, MA 02142
P 617.557.6688

CIVIL

BF&A

17 BRIAN ROAD
LANCASTER, MA 01523
P 978.370.4301

CODE

BLW ENGINEERS

311 GREAT ROAD
P.O. BOX #1551
LITTLETON, MA 01460
P 978.486.4301

MEP/FP

DATE	ISSUE / REVISION	STAMP
03/09/2023	COMPREHENSIVE PERMIT	

REVISIONS ON SHEET

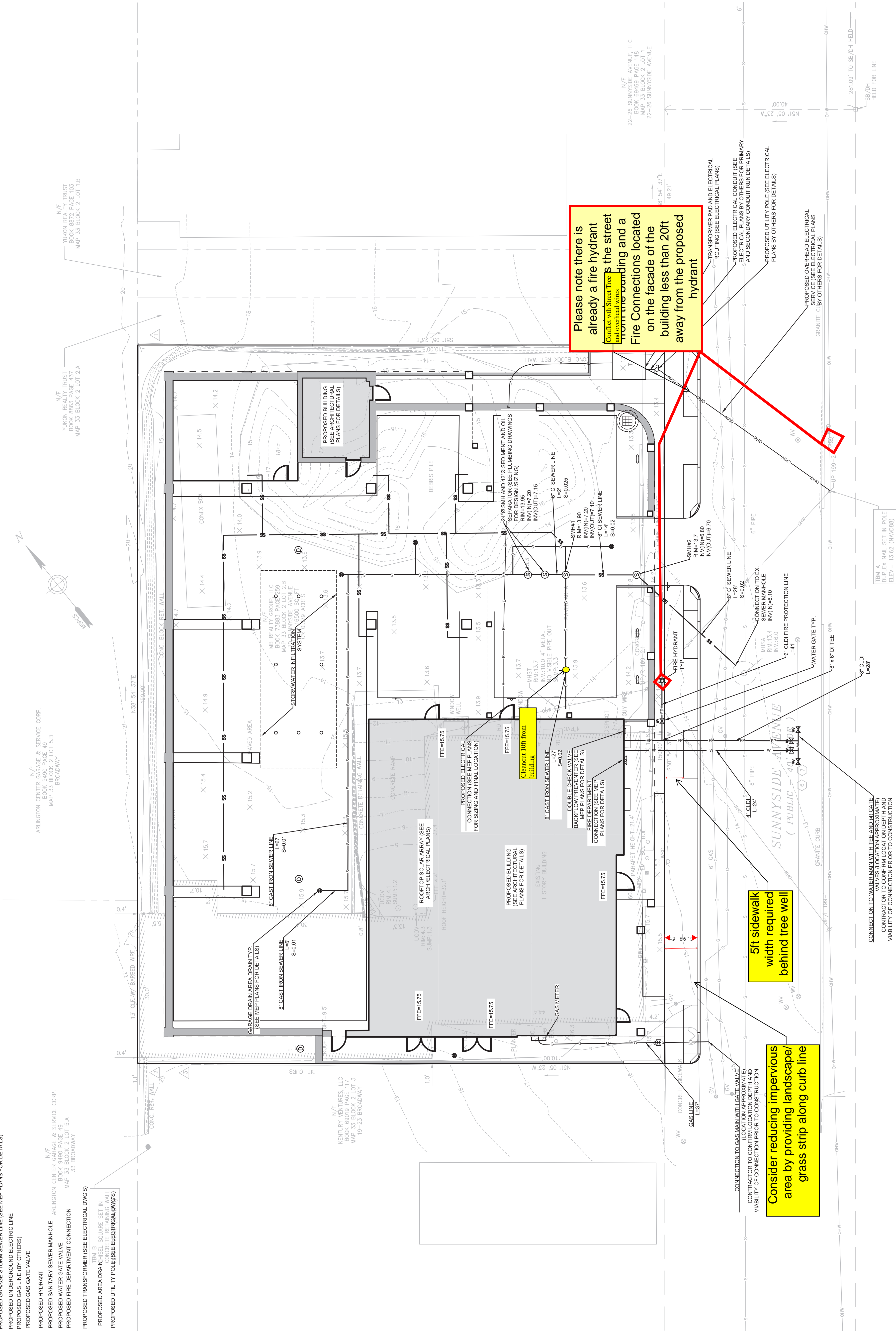
SCALE
1" = 10'

SITE UTILITY
PLAN

C3.00

LEGEND:

- W --- PROPOSED WATER LINE
- FP --- PROPOSED FIRE PROTECTION LINE
- SS --- PROPOSED SANITARY SEWER LINE (SEE MEP PLANS FOR DETAILS)
- S --- PROPOSED GARAGE STORM SEWER LINE (SEE MEP PLANS FOR DETAILS)
- E --- PROPOSED UNDERGROUND ELECTRIC LINE
- G --- PROPOSED GAS LINE (BY OTHERS)
- PROPOSED GAS GATE VALVE
- PROPOSED HYDRANT
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED WATER GATE VALVE
- PROPOSED FIRE DEPARTMENT CONNECTION
- PROPOSED TRANSFORMER (SEE ELECTRICAL DWGS)
- PROPOSED AREA DRAIN-HIGH SET IN
- PROPOSED UTILITY POLE (SEE ELECTRICAL DWGS)



Please note there is already a fire hydrant on the facade of the building and a Fire Connections located on the facade of the building less than 20ft away from the proposed hydrant

5ft sidewalk width required behind tree well

Consider reducing impervious area by providing landscape grass strip along curb line

CONNECTION TO WATER MAIN WITH TIE AND AIR GATE VALVES (LOCATION APPROXIMATE)
CONTRACTOR TO CONFIRM LOCATION DEPTH AND VIABILITY OF CONNECTION PRIOR TO CONSTRUCTION

TRM A
DUPLEX NAIL SET IN POLE
ELEV.= 13.62 (NAVD88)



1 inch = 10 feet

<p>10 SUNNYSIDE AVE.</p>	<p>PROJECT</p>	<p>Housing Corporation of Arlington</p>	<p>252 MASSACHUSETTS AVE. ARLINGTON, MA 02474 P 161.569.5241 005.000.0000</p>	<p>OWNER</p>
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<div> <div>utile</div> <div>ARCHITECTURE + URBAN DESIGN</div> </div> <div> 115 KINGSTON ST BOSTON, MA 02111 P 617 423 2000 F 617 423 1414 utilestudio.com </div>	<div>ARCHITECT</div> <div> SAMIOTES CONSULTANTS INC. 20 A STREET FRAMINGHAM, MA 01701 P 508 877 6688 </div>	<div>CIVIL</div> <div> BF&A 17 BRIAN ROAD LAKESIDE, MA 01923 P 978 376 4301 </div>	<div>CODE</div> <div> BLW ENGINEERS 311 GREAT ROAD P.O. BOX #151 LITTLETON, CO 81460 P 970 486 4301 </div>
			MEFPFP

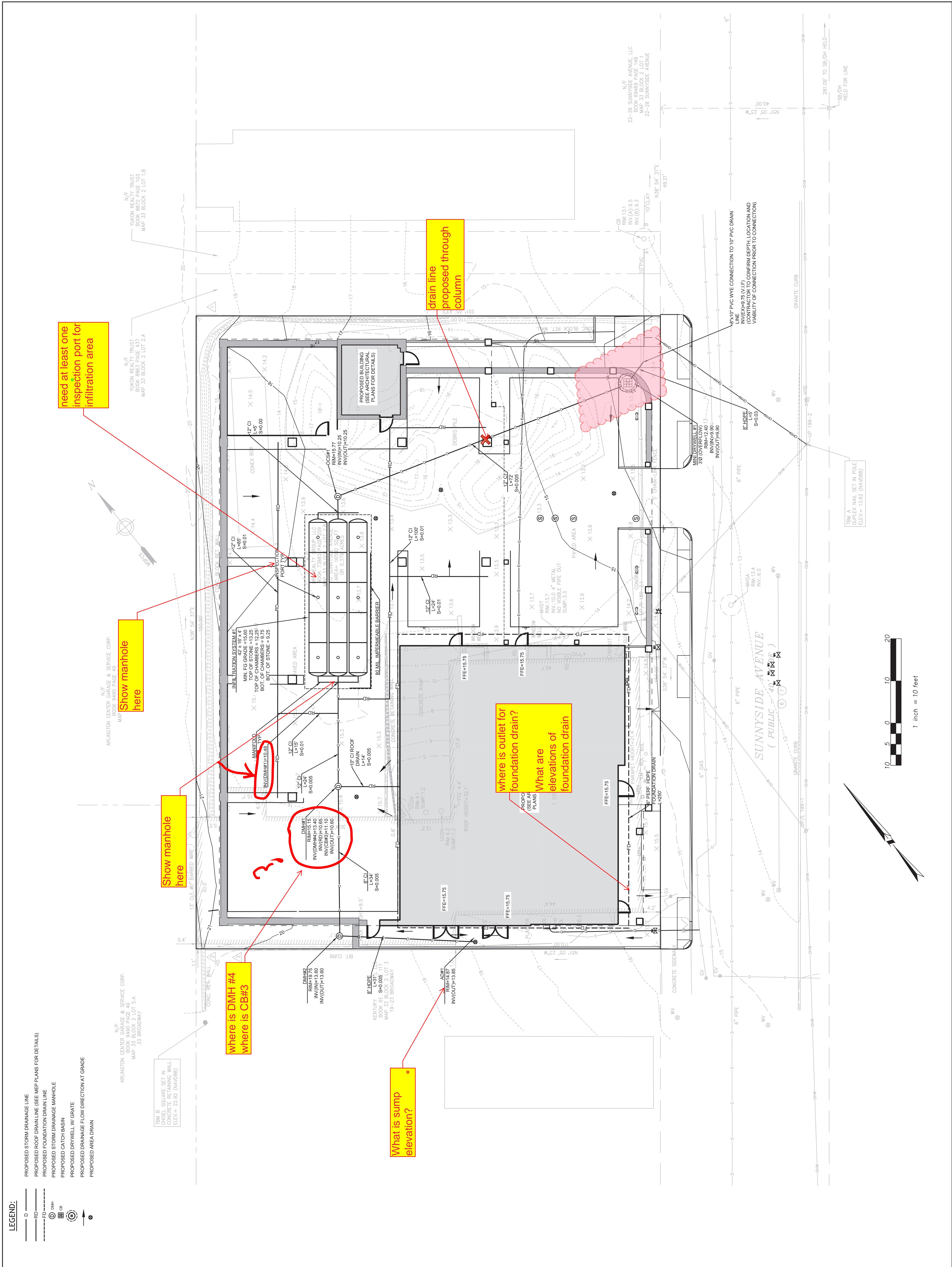
DATE	ISSUE / REVISION	STAMP
03/09/2023	COMPREHENSIVE PERMIT	
REVISIONS ON SHEET		

SCALE
1" = 10'

UTILITY PROJECT NUMBER
Arlington, MA

STORMWATER
MANAGEMENT
PLAN

C5.00





Town of Arlington
Department of Health and Human Services
Office of the Board of Health

27 Maple Street
Arlington, MA 02476

Tel: (781) 316-3170
Fax: (781) 316-3175

MEMORANDUM

To: Zoning Board of Appeals
From: Pdraig Martin, Lead Health Compliance Officer
Date: April 13, 2023
RE: 10 Sunnyside Avenue

Thank you for the opportunity to provide comment on the materials provided for the 10 Sunnyside Avenue development project in East Arlington. After a thorough review, the Board of Health has the following comments.

Trash Storage and Disposal:

The submitted plans show a designated trash room of approximately 293 square feet on the first floor of the structure, with no other space allocated for trash storage. In accordance with 105 CMR 410.000: MINIMUM STANDARDS OF FITNESS FOR HUMAN HABITATION (STATE SANITARY CODE, CHAPTER II), the property owner must provide adequate receptacles for garbage and rubbish accumulation, ensure accessibility for building occupants, and prevent objectionable odors from entering any dwelling units. Considering the proposed 43 dwelling units and commercial space, the Board is concerned that the single designated space on the main floor may be insufficient for trash storage and disposal.

HVAC System:

HVAC System: The project documents do not provide information on the type and location of the HVAC system to be installed at the site. In recent years, our department has received several complaints related to noise generated by certain HVAC systems. To ensure compliance with the Town's Noise Abatement Bylaw and the Massachusetts Department of Environmental Protection's 310 CMR 7.00: Air Pollution Control regulation, the Board requests information on the proposed HVAC system's location and specifications.

Noise Impact from Surrounding Businesses:

Noise Impact from Surrounding Businesses: The proposed mixed-use building will be situated in a B4 zoned area and will be immediately adjacent to B2A zoned property. This location may expose occupants of the residential units to noise from surrounding businesses. The project proposal does not indicate if there are any considerations or mitigation measures in place to reduce sound transmission to the dwelling units. The Board recommends addressing potential noise impacts and incorporating appropriate mitigation strategies into the project plans.

111 Sunnyside Avenue
Arlington, MA 02474
April 28, 2023

Arlington Zoning Board of Appeals
Re: 10 Sunnyside Ave. Comprehensive Permit

Dear Arlington Zoning Board of Appeals,

I'm writing to express my support for the Housing Corporation of Arlington's proposed building at 10 Sunnyside Ave.

This is a great location for multi-family housing: it's near public open space, a large supermarket, several MBTA bus routes, and numerous amenities in Arlington, Cambridge, and Somerville. HCA has a long history of doing great work in our community, and I look forward to welcoming them as neighbors.

Thanks for your time and attention.

Sincerely,

Stephen A. Revilak

BARBARA PATZNER bpatzner@verizon.net

To: ZBA

Sat 4/29/2023 12:14 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

As an Arlington homeowner, I support the HCA project at 10 Sunnyside Ave.
Arlington is in desperate need of affordable housing and this project will assist in that endeavor.

Barbara Patzner
11 Brookdale Rd

Sue Janowitz <sjanowitz@comcast.net>

To: ZBA

Sat 4/29/2023 9:04 PM

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I'm a long-time (50 year) resident of Arlington. When I was single, and then with my husband, we were fortunate enough to be able to pay rent for our various homes. And my husband and I were able to buy a house on Sunnyside Avenue in 1986.

I'm very much in favor of creating more low-income/affordable housing in Arlington. There are so many people that can't afford the current rents and housing prices. The plans for 10 Sunnyside sound great to me. I especially like the common area, which will allow residents to spend time together, similar to neighbors in individual houses congregating on the sidewalk or front yards.

I really hope that this project is approved so that Arlington can provide more low-income housing. The fact that is adjacent to the Broadway bus route is also a very positive factor.

Sincerely,

Sue Janowitz

113 Sunnyside Avenue

RXavid xavid@xavid.us

To: ZBA

Sun 4/30/2023 8:48 PM

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Hello,

I just wanted to write in support of HCS's proposed 10 Sunnyside project.

The housing crisis is one of the biggest issues facing our town, and HCA's proposal is exactly the sort of development we want to encourage: affordable housing near public transit with a variety of unit types and income targets, as well as community space.

As someone with relatives at risk of being priced out of Arlington, anything we can do to address the housing crisis is valuable, so I hope you will quickly approve this project without requesting any changes that would reduce the amount of affordable housing provided.

Thank you,
~Xavid Pretzer
TTM Precinct 17

R. Eric Reuss <ereuss@gmail.com>

To: ZBA

Mon 5/1/2023 1:03 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

To whom it may concern,

I'm a resident of Arlington with an interest in our housing situation. We badly need more places to live around here, particularly affordable housing.

I've looked over the list of waivers being requested for the 10 Sunnyside Ave project. They largely look entirely reasonable given the aim, benefit, and intrinsic cost limitations of an affordable-housing project, as well as the existing conditions surrounding the site. I was a little concerned over the complete waiver of bike parking guidelines, given that bikes are both cheaper to own/maintain and better for the environment. But looking more closely at the plans, there's definitely bike parking marked - maybe a bike cage? I can't quite tell. But so long as there's some thoughtful consideration for tenants who want a bike (or visitors who want to lock up), I think this project seems great.

Thanks,

R. Eric Reuss



May 1, 2023

Christian Klein, Chairperson
Arlington Zoning Board of Appeals
23 Maple Street
Arlington, MA 02476

Re: **Comprehensive Permit Application, 10 Sunnyside Avenue**

Dear Chairperson Klein:

Reference is made to that certain Comprehensive Permit Application for 10 Sunnyside Avenue in Arlington (the "Application") submitted by the Housing Corporation of Arlington (the "Applicant"). The proposed 43-unit rental development (the "Development") would be 100% affordable to families earning at or below 60% of area median income. I write in support of the Development.

Established by Town Meeting, the purpose of the Arlington Affordable Housing Trust Fund (the "Trust") is "to provide for the preservation and creation of Community Housing in the Town of Arlington." The Trust is authorized to support low-income and moderate-income housing, including senior housing for those 60 years and over. We respectfully submit these comments regarding the Development for the consideration of the Zoning Board of Appeals. We are grateful for the ZBA's collaboration with us in the preparation of our Five-Year Action Plan, and are pleased to have the opportunity to comment on the subject Application.

With the proposed Development, the Housing Corporation of Arlington (HCA) is creating an opportunity to add materially to Arlington's inventory of affordable housing. The HCA will tap into state and Federal funding to subsidize the affordability of the development, and will seek housing vouchers to add even deeper affordability for a subset of the units. This type of affordable housing is described in the Trust's Action Plan as our highest priority for increasing affordable housing in Arlington, and we, together with the Community Preservation Act Committee, intend to provide financial support for the Development.

The Trust's Action Plan places a priority on aligning our affordable housing objectives with our commitments to sustainability, diversity and equity. The subject Development checks a number of boxes in this regard. By building higher density housing along transit corridors, it will contribute to a less car-dependent community, and provide lower income residents with access to jobs and amenities. We also note that Arlington's Fair Housing Action Plan and Housing Plan highlight a lack of substantial racial and ethnic diversity in our community, a trend away from economic diversity, and substantial housing challenges that are preventing, or have the potential to prevent, seniors, people with disabilities or special needs and people of color from moving to or staying in Arlington. The creation of housing affordable to such groups, and designed to meet the needs of such groups, is an important priority for the Trust, and the subject Development has the potential to address these goals as well.

In conclusion, the Development presents an opportunity to support the Housing Corporation of Arlington to materially increase the number of affordable rental units in Arlington, with limited subsidy from the Town, leveraging substantial state and federal resources. We urge the ZBA to grant the HCA's request for a Comprehensive Permit.

Many thanks for your consideration and your thoughtful and dedicated service to the Town.

Respectfully submitted,

Arlington Affordable Housing Trust Fund

By: 

Karen E. Kelleher, Chair



Kelda Fontenot <keldafontenot@gmail.com>

To: ZBA

Mon 5/1/2023 3:35 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

To whom it may concern:

I understand Housing Corporation of Arlington is attempting to gain approval for new construction of their Sunnyside project. The plan anticipates creation of 43 units of affordable housing in mixed use space, raising HCA's portfolio (and all associated responsibilities) significantly (from about 150 to about 200 units).

Generally, I believe the more accessible housing, the better it is for everyone. However, after living in HCA's most recent project, BDSI, I completely oppose the approval of the sunnyside project. Although the country, state, and region need affordable units desperately, these affordable units should allow residents to live in good conditions, with dignity, free to let their children play, free to live in a healthy environment, free to unionize, and free from retaliation for expecting such basic rights.

BDSI, like the proposed sunnyside project, increased HCA's portfolio significantly. However, it was delayed, way above budget, questionably built (mostly on an EPA toxic site, without indoor air quality testing), and feels like a prison. Problems I've noted since moving in (1 year ago - with Peabody properties, the current company managing HCA's entire portfolio - in charge) have still not been resolved, though Peabody has routinely used textbook retaliation when I've voiced concern.

For example, the BDSI project is entirely nonsmoking indoors or anywhere on the property due to the type of federal funding approved to make this project a reality. In addition, residents were clearly told during lease signing that although marijuana is legal in Massachusetts, it is not allowed on premises here for the same federal funding reasons.

A member of my family has needed medical care multiple times (including a hospitalization) due to the extreme amounts of indoor smoking - particularly marijuana. The smoke alarms regularly blare, and have needed replacement, because of the smoke drifting into our apartment.

However, when I complained, management did not respond for over a month - then responded by ignoring the smoke but implying my child drawing on the sidewalk with sidewalk chalk was a serious lease violation - then at one point, placed a large stand-up ashtray as if to designate a smoking spot directly outside of my bedroom window where I complained people were standing and smoking, causing smoke alarms to go off and our family to be ill. I was further told my child was seen "playing" in the hallway on video - which was not allowed, and again, cited as a serious lease violation. (HCA's lawyer clarified that he had viewed the video of a child "playing" and it only showed my child sort of skipping to the indoor bike room during the day while proceeding to our only apartment entrance - past the bike room and located in an indoor hallway with a camera trained straight at my apartment door).

To make matters worse, the windows only open literally 1" - enough to let in fumes, but not enough to place a box fan in the window to get a cross breeze or blow the smoke back outside. Peabody has submitted reasonable accommodation requests on my behalf without my knowledge or permission twice - once was to actually relocate my family, and that was after I demanded they cease these actions following the first reasonable accommodation request I didn't make.

You may wonder why I'm the only tenant in this project speaking up. Other residents were equally concerned and we started forming a tenants union. However, HCA's social worker, Paul Jean, told me last July "they were going to do that" when I requested permission to distribute flyers to all tenants. HCA tried to form a "tenants council", which is clearly not a tenants union,

by hand picking who they would like to be involved and paying for “leadership training”, which fizzed out and ended prematurely as soon as the organization providing the training realized what they were told and the reality were in stark contrast.

While we still maintain our grass roots tenants union, the other members are afraid to speak up after witnessing the extensive retaliation I endured when addressing group issues, such as rampant indoor smoking, trash sitting outside all week, poor ventilation, etc.

Residents of other HCA properties expressed the same concern - they have witnessed lack of maintenance and extreme retaliation over the years - whether Peabody Properties, HCA directly, or under their former management companies (which are always interchangeable with HCA, since their address and phone number is identical).

Speaking of maintenance, the board of health has cited HCA in cases of property neglect so extreme rent was withheld from neighboring housing authorities due to HCA's lack of even an attempt to fix violations. My unit (just built) failed inspection due to the poor ventilation I've complained about since day 1, along with other building defects brought to HCA/Peabody's attention, but unaddressed. Peabody/HCA was given 30 days to fix the violations but have not contacted me at all to date (going on 45 days), though a massive new water leak has formed in that time and I was threatened with my car being towed from the parking lot.

Low income and so-called affordable housing provides big money with very little oversight. The only people seriously knowledgeable and interested in the actual vs promised conditions are the residents of these projects, and they're generally afraid to come forward - for good reason, as I have seen for myself.

Before you grant HCA more funding and reputational prowess, please consider that they have not kept up the “affordable” units in their portfolio now, despite receiving market rent through guaranteed funding schemes (a 3 bedroom in BDSI provides over \$3,000/month rent to HCA between the tenant portion and subsidy. The 2 bedroom units provide over \$2300 - 100% of fair market rent for the area.)

Citing new management does not explain why anything will improve next time - both the social workers employed by HCA and Erica Schwarz herself were informed of the horrible conditions, in case Peabody properties had failed to inform them. Nor does the length of time expected to pass between the approval sought and expected completion- just look at the history of BDSI. While I don't wish to publicly share emails back and forth with both HCA and Peabody properties documenting what I've stated, I'm happy to share these privately with those making decisions in this matter to prove the accuracy of my claims.

I hope you'll take these serious matters into consideration before approving HCA's proposed Sunnyside project. Please email me if you'd like proof of any of my statements. I realize they may be alarming and inconsistent with the perception of HCA.

I also encourage you to question how many Arlington families or individuals were helped with HCA's most recent projects. Although where people come from makes no difference to me, I hear a lot of emphasis placed on helping Arlington residents. However, very few residents here have a connection to Arlington before moving into HCA's projects. (This is not new and was noted by an HCA resident and former board member years ago).

Wishing you the very best in your decision,
Kelda Fontenot

franktadley <franktadley@rcn.com>

To: ZBA

Mon 5/1/2023 6:12 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

In support of 10 Sunnyside project.

"As a tenant and member of the board of HCA I get to see all side of the issue. I have been living in Arlington on and off since the late '70's. I have seen the growth and development and the impact is has had on the housing market.

I have also been a consistent volunteer at the Senior Center for both the Meals-on-Wheels program and the ASA. This gives insight to the needs and concerns for many Town residents.

I believe it is in the general interest of the Town and all its residents to keep a diverse population who both live, work, volunteer and purchase goods in Arlington. The stress from the higher cost of living make affordable housing an urgent need."

Frank Tadley 114 Lowell Street

bernardiaugust@aol.com

To: ZBA

Tue 5/2/2023 7:29 AM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

To Town of Arlington Zoning Board of Appeal:

I am writing to express my strong support of the proposed affordable housing project at 10 Sunnyside Avenue being developed by the Housing Corporation of Arlington. I live in the neighborhood and think this is a great location for a multi-storied building. I have worked for many years providing social services in Arlington and I am acutely aware of the growing housing crisis that many Arlington residents are facing. The Town must support any opportunity it can to support the development of affordable housing units.

Respectfully,

Lourie August
36 Henderson St.
Arlington

jon@planetbanjo.com

To: ZBA

Tue 5/2/2023 8:52 AM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Dear ZBA members,

This is the way Arlington should be supporting real all-affordable housing. Real solutions to real problems. Please support 10 Sunnyside Ave. You may record my comments in the public record. Thank you, Jon Gersh, TMM P18, Kipling Rd.

Sent from my iBanjo

Alex Bagnall <alex.bagnall@gmail.com>

To: ZBA

Tue 5/2/2023 9:59 AM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Dear Members of the ZBA,

I am writing to support HCA's Comprehensive Permit Application for their proposed project at 10 Sunnyside Ave. As you know, creating housing in town that is affordable to those at 30% and 60% of AMI is very difficult. We should be supporting HCA in their efforts here. I am also delighted to see a mix of 1, 2 and 3-bedroom units. Time is money, especially with construction projects. Time is also of the essence for those living with housing insecurity. I hope you will move quickly to approve this project.

Thank you for reading and for serving on the ZBA,
Alex Bagnall
Wyman Street

①

Cindy Kartch
13 Peirce Street #1
Arlington, MA 02476

781-648-6984

No email

No cell

4/29/23

Arlington Zoning Board of Appeals

Cindy Kartch
13 Peirce St #1 (low income HCA housing)

moved to Arlington Nov. 1988 with help from the
Arlington Housing Authority.

got involved with HCA when I suddenly had to
move in 2007.

moved into HCA building in 2010. Plan to live here
until death or institutionalization.

Being in a building with only four units, like the first
place I lived, and the place I am living now is
crucial to me in many ways. The middle living situa-
tion had 60 units and was very bad for me, personally.

Important also because rent is stable and therefore
living situation is stable. Arlington Housing Authority
had changed their financial policies over the years, and
this was no longer guaranteed.

the apartment is large for a one bedroom. It has a full
sized refrigerator, which the other two locations didn't.

Arlington is significantly below the state law limit
for affordable housing; and that limit is significantly
below Arlington's actual need.

Zoning Board Copy

②

Cindy Kartch
13 Peirce Street #1
Arlington, MA 02476

781-648-6984

No email

No cell

4/29/23

I have found out that you get to call something "affordable" housing at 80% of AMI, or approximately \$120,000 for a family of two.

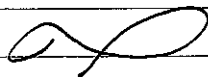
the building in question will address mostly people at 60% AMI with some for 30% AMI. It will not include any low income housing.

the Arlington Housing Authority has not built any new affordable or low income housing in the 35 years I have lived here.

Only HCHA has rehabbed or built affordable or low income housing in that time. It's got to be done!

Some Town Employees cannot afford to live here. Some retirees cannot afford to live here. People who have lived here most of their lives and own a home - a spouse dies - and they may need it. Raised here as children, as adults, they may want to raise their families here. Economic changes, Health changes, Domestic Violence, Disabilities, and many other things may put people in the category of needing it. the time for NIMBY (not in my backyard) is long over.

the design is attractive, as these things go. It will have a community room available to the town and an outdoor deck of greenery which will be visible to the town. It is intelligently designed.



To the Arlington Zoning Board of Appeals:

Re: Letter in Support of 10 Sunnyside Avenue Affordable Housing Project

I write in strong support of the affordable housing project proposed at 10 Sunnyside Avenue by the Housing Corporation of Arlington (HCA). The existing property is a vacant autobody shop that needs redevelopment and what better than 100% affordable housing. Arlington and the Boston metro region in general desperately need more of all types of housing stock, but especially affordable housing.

To begin with, this project supports that need by its very purpose. But it goes above and beyond that minimum threshold. 7 of the units are planned to be 3-bedrooms; larger affordable units are desperately needed by families. The units are being built for those at or below 60% and 30% of area median income – this type of housing is in even more dire need as many affordable projects in the area are built for those at 80% or even 110% or below of area median income. The project will be built to Passive House standards, one of the most environmentally sustainable and energy efficient possible designs. The site is near Alewife Brook for access to natural areas but not in a flood zone. The location is on a bus route and is walkable to several parks and recreational areas as well as a grocery store, making it a place that those without cars can live with access to necessary amenities.

I also support this level of density near major transit, commercial, and pedestrian thoroughfares in Arlington, especially if they are affordable housing developments. Placing housing in walkable areas that are near public transit and basic amenities helps decrease overall car usage and decreases congestion, pollution, and carbon footprint.

In short, please approve the Comprehensive Permit for this project as soon as possible so that the Housing Corporation of Arlington can move ahead and get the funding needed to begin construction.

Sincerely,
Andrew (Andy) Greenspon
89 Palmer St
Town Meeting Member, Precinct 5

Jake Glickel <glickel@gmail.com>

To: ZBA

Cc: ESchwarz@housingcorporarlinton.org

Tue 5/2/2023 10:05 AM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Hello,

I support new housing at 10 Sunnyside. Arlington needs more housing, especially affordable housing and this is a great project.

Thank You,
Jacob Glickel
42 Bates Road

Joseph Solomon solomj@gmail.com

To: ZBA

Tue 5/2/2023 3:15 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

To the members of the ZBA,

I would like to voice my strong support for the 10 Sunnyside project. As our region continues to struggle with housing affordability, Arlington can and should take advantage of every opportunity to help. Allowing HCA to create housing that is safe, attractive, environmentally sound, and affordable in perpetuity is a critical component of how we can do this.

I notice that HCA has requested a number of waivers for parking requirements. I encourage granting these and encouraging a review of further reductions given the 2022 changes to the Zoning Bylaw. I am confident that HCA has a better idea of the needs of their future tenants than our zoning code reflects. Given a tradeoff between parking square footage and housing square footage, I trust HCA to make the best decision.

Thank you all for your work on behalf of the town,
Joe Solomon
128 Appleton St

Barbara Thornton <BThornton@assetstewardship.com>

To: ZBA; Christian Klein <cmqklein@gmail.com>

Cc: Patrick Hanlon <patrick.m.hanlon@gmail.com>

+2 others

Tue 5/2/2023 5:05 PM

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This site, so well located for transportation, natural open space, Arlington elementary schools, walking and shopping amenities in East Arlington and in Somerville, is in a superbly desirable location, a location that will only become more desirable as the population in this region increases. So I'm particularly delighted to see it reserved as affordable housing for people who can not now afford to live anywhere in Arlington but now can benefit from one of the best sites we can offer as a Town.

I am very much in favor of this development brought to us by the Housing Corporation of Arlington. I support its request for a comprehensive permit.

My only disappointment is that it is not taller, offering a few more people the opportunity to be in this terrific location. Perhaps in future years additional floors can be added.

I'm also very pleased to see that the project will meet Passive House standards. It wasn't so long ago that such standards would seem untenable for construction, especially for affordable housing construction. It makes me proud of our community that we can step up and reach for such goals.

It would be an added benefit, from my perspective, if some of these units could house Arlington's young school teachers and other Town employees. I also hope the tenant selection process will allow for racial diversity in addition to the income diversity inherent in the 30% - 60% AMI categories.

Best regards,
Barbara Thornton

+1 617-699-2213

blog: [AssetStewardship.com](https://assetstewardship.com)

twitter: [@assetstewards](https://twitter.com/assetstewards)

linkedin: [Barbara Thornton](https://www.linkedin.com/in/BarbaraThornton)

Judith Garber <judithgarber@gmail.com>

To: ZBA

Tue 5/2/2023 8:23 PM

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

To the Zoning Board,

I was very happy to see HCA's proposal for a 43-unit affordable housing project on Sunnyside ave. The location is conveniently near green space, shops, and the 87 bus stop making it a great place to live. I live in East Arlington and would welcome more neighbors nearby. It's especially encouraging to see more affordable housing being built, as it is so desperately needed throughout the state. I hope you will follow the lead of the select board and approve this project.

Respectfully,

Judith Garber
Arlington resident & town meeting member, P4

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Judith Garber
973-943-8402
[Judithgarber@gmail.com](mailto:judithgarber@gmail.com)